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ABSTRACT

This study was conducted as part of a larger study to determine characteristics common to Associate Degree graduates of six technical education programs at Pennsylvania State University so as to determine its relevance and relative effectiveness to the population it served. It is the second followup in the longitudinal study. Data were derived from questionnaires sent to more than 1,700 graduates of the specified programs during the 1955 through 1971 period. Findings included: (1) The types of continuing education courses most selected by these graduates were in order of priority: mathematics, the biological and physical sciences, social sciences, humanities, fine arts, courses directly related to Associate Degree programs, and less frequently, other courses, and (2) Continuing education was an important activity for these graduates with 55 percent of the graduates enrolled previously or at present. A small percent had earned additional degrees and more were working toward another degree. Related documents available in this issue are VT 020 384 and VT 020 387. (SN)

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THE PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF VOCATIONAL EDUCATION

CONTINUING EDUCATION CHARACTERISTICS OF SELECTED ASSOCIATE DEGREE GRADUATES

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VOCATIONAL — TECHNICAL EDUCATION Research Report

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CONTINUING EDUCATION CHARACTERISTICS OF SELECTED ASSOCIATE DEGREE GRADUATES

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June 1973

The Department of Vocational Education
The Pennsylvania State University

PREFACE

The findings reported herein are a part of a larger study concerning Associate Degree graduates of the Electrical-Engineering Technology, Drafting Design Technology, Business, Retailing, Surveying Technology, and Forestry Technology curriculums of The Pennsylvania State University. The first two curriculums mentioned have had 17 graduation classes (1955 through 1971) while the others are considerably younger. The results and suggestions are most appropriate for the two older programs because they have provided the major portion of the graduates (and therefore the sample). Other aspects of the larger study include geographic and job mobility, job satisfaction characteristics, relevancy of curriculum topics for present jobs, and general demographic considerations of Associate Degree graduates. These are presented in other reports.

This is the third of four reports emanating from the second follow-up study made of the Pennsylvania State University Associate Degree graduates by this investigator. The results of the first study were published in four reports by the Department of Vocational Education in 1970-71. It is hoped the effort can be continued every two years so that the entire activity will become a longitudinal study of the Pennsylvania State University Associate Degree graduates. Because of the size of the original population from which the sample is drawn (greater than 8,000), it is assumed the findings are somewhat typical of graduates from similar two-year programs throughout the nation.

Therefore, the findings, conclusions, and suggestions would hopefully be of some use for others interested in two year college graduates and their curriculums.

The findings provided in this report emphasize the importance of continuing education in the on-going progress of Associate Degree graduates. Indications are that this form of striving for job and personal advancement will gain in popularity and become even more important in the future.

Special thanks is offered to Eugenio Basualdo for his tireless efforts in the drawing of the many graphs provided, and to Edward Mann who researched and wrote the review of the related literature section. Mr. Mann and Mr. Basualdo, who both served as graduate assistants to this investigator in the Department of Vocational Education, also deserve recognition for the many hours spent at the Computation Center running the required statistical programs and preparation of the tables that appear herein.

The study was supported by funds from the Bureau of Vocational, Technical and Continuing Education of The Pennsylvania Department of Education and The Department of Vocational Education of the Pennsylvania State University. The analysis used herein is described in the sampling and findings sections. Using the findings as a basis, several major suggestions are made in the last section. The investigator assumes full responsibility for them.

Angelo C. Gillie, Jr.

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INTRODUCTION

The findings reported in this study are derived from a questionnaire sent to 33 percent of the more than 8,000 associate degree graduates (1955-71) of The Pennsylvania State University. The total usable sample exceeded 1,700 graduates, with most of them completing their associate degree work during the past five years. The curriculums in which graduates were queried were: Electrical Engineering Technology (EET), Drafting Design Technology (DDT), Business (BUS), Retailing (RTL), Surveying Technology (SRT), and Forest Technology (FORT). The distribution of the sample by graduation year and curriculum is displayed in Table 1.

This is the second follow-up conducted in a longitudinal study of The Pennsylvania State University associate degree graduates. The overall concern in the study dealt with obtaining information about the graduates of the curriculums indicated. Two of these programs (EET and DDT) have had associate degree graduates since 1955, while the other four included herein had graduates only since the late 1960's. The study is restricted to graduates from programs that have had a minimum of 75 graduates up to and including the 1971 graduation class (see Table 1). Several kinds of information sought in this study can be categorized as follows: 1) continuing education characteristics; 2) information about employment since earning the associate degree; 3) job satisfaction characteristics; 4) job orientation characteristics (data, people, things); 5) need for certain curriculum topics on present jobs.

This report is limited to the continuing education characteristics of the graduates and certain relationships between these and other selected characteristics.

The major reasons for conducting this part of the study was to

1. Identify relationships for all graduates between year of graduation and courses taken in the following categories:

   A. mathematics;
   B. biological and physical sciences;
   C. social sciences;
   D. humanities;
   E. fine arts;
   F. courses directly related to associate degree programs;
   G. other courses.

2. Identify relationships for all graduates between year of graduation and;

   A. sources of financial support for continuing education courses;
   B. time when courses were taken (work time or leisure time).

3. Identify relationships between graduates of each curriculum for every year of graduation and courses taken in the following categories.

   A. mathematics;
   B. biological and physical sciences;
   C. social sciences;
   D. humanities;
   E. fine arts;
   F. courses directly related to associate degree programs;
   G. other courses.

4. Identify relationships between graduates of each curriculum for every year of graduation and;

   A. sources of financial support for continuing education courses.
   B. time when courses were taken (work time or leisure time).

5. Identify relationships between graduates by highest degree earned and courses taken in the following categories;

   A. mathematics;
   B. biological and physical sciences;
   C. social sciences;
   D. humanities;
   E. fine arts;
   F. courses directly related to associate degree programs;
   G. other courses.

6. Identify relationships between graduates by highest degree earned and;

   A. sources of financial support for continuing education courses;
   B. time when courses were taken (work time or leisure time).

REVIEW OF RELATED LITERATURE

by Edward Mann

Education as a life long process, at least for a portion of the population, is an ideal as old as Western civilization. For the Greek citizen, the medieval scholar and the Renaissance man, learning was an attribute of life, continuing until death. The central purpose of American adult education today is to preserve this ideal in the more formal structure of an organized program, and to apply it to as large a portion of the total population as is capable, by both innate intelligence and interest in continuing to learn. (Petersen, 1960).

Many institutions have developed comprehensive programs in continuing education consisting of credit and non-credit courses, seminars, short courses, workshops and conferences to meet the adult educational needs of the population. Adult education is an open system which any institution may enter at a time and under conditions of its own choosing. As a result, the institutional sponsorship of adult education in this country has expanded continuously and rapidly, although unevenly; and the end of this process is not yet in sight. (Knowles, 1962).

It is estimated that between 25 and 30 million adults are actively involved in continuing education programs although fewer than one-fourth are in college and university programs (Troutt, 1971). Other sponsoring institutions include churches, community organizations,

business and industry, public schools, private schools, government agencies, and the armed forces (Kleis and Butcher, 1969).

There has been confusion in the use of theterms adult education and continuing education. Some people use the terms synonymously; some draw sharp lines of distinction between them; and still others seem unable to decide. Verner (1964) states that "adult education" provides access to learning through which an individual achieves continuous growth toward maturity in all phases of life. Burch (1961) defines continuing education as the selection, provision, and promotion of intellectually demanding educational activities prepared especially for adults who have finished their formal schooling; designed to enhance the quality of individuals as individuals and increase their effectiveness in their vocations or professions and as a citizen of a free society. At the philosophical level, the distinction has appeared--that continuing education identifies an ideal; whereas, adult education identifies a deliberate means to facilitate the realization of that ideal. At the operational level, it has become common for adult educators who function within the context of colleges and universities to refer to their activity as continuing education while referring to all other educative activities designed for adults as adult education. Murphy (1969) points out that even in this definition another problem arises. Continuing education has different meanings at different institutions. At some, it means any program conducted after the eight to five classroom schedule. At others, it means any non-credit program, no matter when it is conducted. It also means any program not listed in the institution's

catalog. And at still others, it includes all students taking less than a full course load.

For the purpose of this study, adult education and continuing education will be used synonymously and defined as any course, credit or non-credit, taken beyond the associate degree. The definition correctly suggests that there are no limitations on what subject matter adults may study and that how they deal with the subject matter can be equally varied. Adult education is normally a highly fluid, flexible, multiple-faceted operation in all its aspects (Grattan, 1955).

The four objectives of continuing education past the associate degree are:

1. Upgrading a person's education. A person may work toward a bachelor's degree to raise the level of his formal capabilities.

2. Updating a person's education. A person who received an associate degree ten years ago may wish to take course work to make his formal education comparable to that of a person receiving an associate degree this year.

3. Diversification to new fields. A person educated in one field may seek to obtain some formal education in another field, but not necessarily on a higher degree level.

4. Maturing of a person's education. A person may add a new perspective in his own field (Social Research, 1969).

Arnold (1969) reported that in 1968 there were 239,118 students enrolled in continuing education courses at 70 institutions of higher education in Pennsylvania. However, a study done during the same year by The Pennsylvania State University revealed the number of

higher education institutions being involved in continuing education activities was 89 or 67 percent of the total number of institutions of higher education. The enrollment was set at 261,519 for 1968.

By 1969, institutions of higher learning in Pennsylvania, or 79 percent, conducted some type of continuing education activity. This is a 12 percent increase over the 1968 figure. And the number of registrations was up to 500,212 (The Pennsylvania State University, 1970).

Degree programs were offered by 84 instituions or 73 percent while 44 institutions or 38 percent offered non-degree credit programs. At the same time, 60 colleges and universities (52 percent) conducted non-credit classes. Also conferences, institutions and workshops were held at 76 institutions (66 percent) with the state-related colleges reporting more than half of the registration (The Pennsylvania State University, 1970).

According to Hummel (1970-71) the number of registrations for the 70-71 fiscal year was nearly 600,000. Nearly one-half of all registrations reported were involved in degree programs, with 43 percent in non-credit activities and approximately nine percent were in non-degree credit programs.

A review by academic area revealed that education, with 74,401 registrations, was the most popular, with nearly three-fourths of the total registrations studying in degree credit programs. Non-credit and non-degree credit registrations accounted for 23.5 and 4.1 percent of the total respectively. The registrations in education were followed closely by those reported in social sciences, business and management and health professions.

Classes and short courses accounted for 65 percent of all instruction in adult/continuing education. Other types of instruction with a large number of registrations included conferences and lecture series, with 23 and seven percent of the total respectively (Hummel, 1970-71).

The fundamental reasons for the increases in adult/continuing education are that as a college education and advanced degrees become more widely accepted as essential for the young, they will be desired by an increasing number of adults. Closely allied to this point is the fact that the formally educated person is the one who participates in adult/continuing education activities; as one level of education increases, so will the other. More than that, as institutions become more readily available geographically and as their curricula increase, they will come within orbit of many who will take advantage of the opportunities offered them. Finally, institutions of higher learning will want to undertake more adult/continuing education because they feel the necessity to serve the needs of their constituencies, because their day time facilities cannot take care of the load of service they wish to perform, and because adult/continuing education is excellent for public relations, promotions, increased income, and the spread of final costs over a larger volume of service (Houle, 1959).

Adult/continuing education is a vital aspect of the life of educational institutions, and the pressures on these institutions for further development and leadership will increase and intensify during the next decade.

ESTABLISHMENT OF THE CONTINUING EDUCATION ITEMS

Many of the items included in the questionnaire were obtained from the faculty in the several curriculums. The course related topics submitted by faculty members in each program were tabulated and those mentioned most frequently were chosen for inclusion as the specialized curriculum topics in the third page of the questionnaire. Included among the topics common to all graduates were questions related to courses taken since receipt of their last degree. This was considered to be the continuing education component of the study. Courses and items included in this part of the questionnaire were stated in the following manner:

"Courses taken since completing your last degree

A. mathematics (algebra, geometry, calculus, differential equations, statistics, etc.) - number of credit hours for credit and non credit courses;

B. biological and physical sciences (physics, chemistry, geology, botany, zoology, etc.) - number of credit hours for credit and non credit courses;

C. social sciences (sociology, history, psychology, anthropology, economics, political sciences, etc.) - number of credit hours for credit and non credit courses;

D. humanities (English, literature, foreign languages, philosophy, etc.) - number of credit hours for credit and non credit courses.

E. fine arts (music, painting, sculpturing, ceramics, etc.) - number of credit hours for credit and non credit courses;

F. courses directly related to your associate degree program (example - finance course by a business graduate, etc.) - number of credit hours for credit and non credit courses;

G. other courses - number of credit hours for credit and non credit courses;

H. courses completed by me were paid for (employer paid for all; employee paid for more than half; I paid for all, I paid for more than half; G.I. Bill paid for all; G.I. Bill for more than half; all were paid for by other means; more than half were paid by other means; none of the above);

I. the courses taken by me since completing the associate degree were (all taken on company time; more than half taken on company time; all taken on my own time; more than half taken on my own time)."

The mean value of each, as well as a number of relationships between them and other questionnaire topics are examined in the findings sections.

THE SAMPLE AND SAMPLING STRATEGY

One part of the sample, the 1955 through '69 graduates, were those used in the first phase of the follow-up study which was conducted in 1969-70 (Gillie, 1971). They were originally selected on a stratified random basis where strata were year of graduation and curriculum. Added to this was a group of the 1970 and '71 graduation classes, chosen in the same manner. Approximately 33 percent of all graduates were selected.

After final selection of the sample and revisions of the questionnaire, it was mailed to 1,748 graduates. See Table 1 for sample distribution by curriculum and graduation year. A strategy was inaugurated (Gillie, 1971) in which a series of several follow-up letters were sent in an attempt to increase the rate of response. About 57 percent of the respondents returned their questionnaires (See Table 2) while another 4.4 percent were declared "undeliverable" by postal authorities. This entire procedure took about 4.5 weeks. The final rate of response by curriculum is shown in Table 2.

In order to determine, to some extent at least, whether those who did not respond were "different" in terms of answers to the questionnaire items, 10 percent of the nonrespondents were randomly selected and contacted by telephone. Sixty graduates were contacted in this manner, and 54 of them (90 percent) responded with completed questionnaires (29 EET, 20 DDT, and 6 from the other programs.

From the first 25 percent of the respondents, 54 graduates were

TABLE 1

SAMPLE DISTRIBUTION BY CURRICULUM AND YEAR OF GRADUATION

Year of Graduation	Sample N	Curriculum					
		DDT	EET	BUS*	RTL*	FORT*	SRT*
1955	18	9	9				
1956	23	14	9				
1957	41	19	22				
1958	54	39	15				
1959	59	37	22				
1960	52	29	23				
1961	39	21	18				
1962	44	19	25				
1963	55	34	21				
1964	45	21	24				
1965	60	31	29				
1966	62	30	32				
1967	64	35	29				
1968	62	33	28		1		
1969	85	46	36	2			1
1970	124	37	50	21	6	3	7
1971	110	37	28	25	3	7	10

*No returns until 1968

TABLE 2

RESPONSE RATE BY CURRICULUM

Curriculum	Number Sent	Number Returned*	Percent Returned
Electrical-Electronics Technology (EET)	665	420	63.2%
Drafting Design Technology (DDT)	813	491	60.4%
Business (BUS)	203	48	23.6%
Retailing (RTL)	21	14	66.7%
Forestry Technology (FORT)	20	6	30.0%
Surveying Technology (SRT)	26	18	69.2%
TOTAL	1,748	997	57.3%

*Number of usable returns

randomly selected. Also, 54 graduates were randomly selected from the last 25 percent of the respondents. Comparisons of responses for the six major job satisfaction questions between these two responding groups and the telephone follow-up group were made.

This was accomplished in the following manner: A test among the three types of groups mentioned on the six selected questions was conducted. The analysis of variance for five of the six questions showed no difference among the three groups (early respondents, late respondents, telephone respondents). In one of the analyses (question: As compared with other aspects of your life, where would you rank the importance of your work?), a difference among the three groups was established. Using a follow-up test of possible t-tests (ANOVES/ANOVUM, 1971) it was found that the telephone group differed from the early and late responding groups. The group which had the abnormal variance was the telephone group. However, the overall ANOVA which uncovered the difference among group means violated the assumption of homogeneity of variance and therefore should be interpreted with caution. This enables us to at least suspect that there were no significant differences between: a) early and late respondents; b) late respondents and nonrespondents; c) early respondents and nonrespondents, in terms of the questionnaire topics. Having identified this likely homogeneity we proceeded to analyze the data with no further consideration given to this point.

THE FINDINGS

In this section, the extent to which courses were taken and under what conditions, are examined. First, we review the entire sample in this light and then proceed to examine them on a curriculum basis. In both cases, the sample is viewed by graduation year (see Table 3) since the two major curriculums (EET and DDT) have had a total of 17 graduating classes. A third approach used was to examine each graduation group in terms of the seven course categories, thereby providing a profile for each class.

I. All Graduates

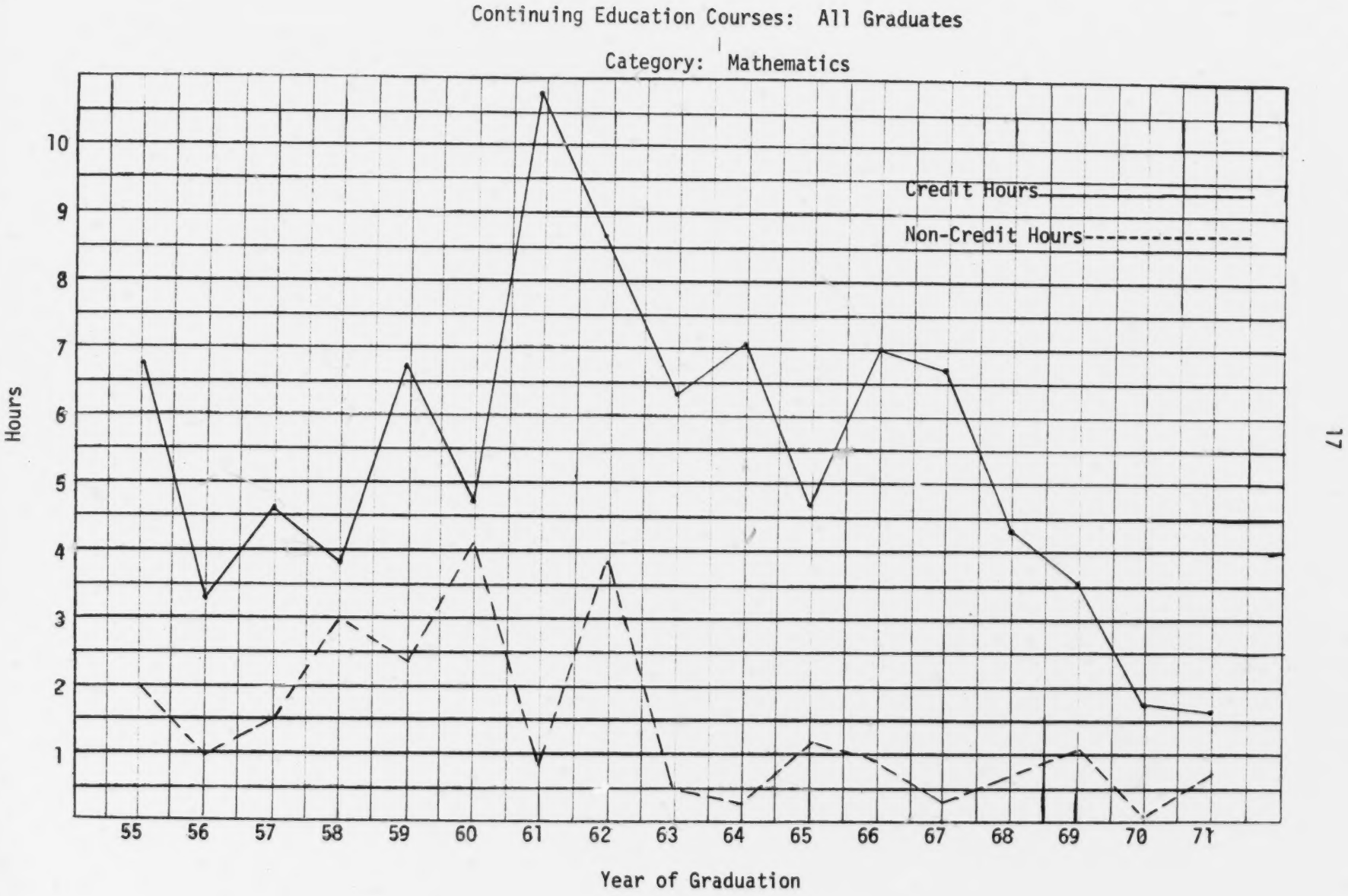
Table 3 and Figures 1 through 7 illustrate the findings and relationships described herein. The average number of course hours taken by generic subject, both credit and non credit are displayed in Table 3. It is readily seen that mathematics courses have been taken most often, with "other" next in frequency, followed closely by courses in the bio-physical sciences and social science areas. A reasonable conjecture is that additional courses in mathematics and bio-physical sciences were taken with the intention of increasing expertise in their specialities, while the courses taken in the social science related areas may have been an attempt to increase their knowledge and skills in dealing with people, institutions, and social relationships.

Figure 1 shows that the early and middle 1960's graduates have accumulated the most credit hours in mathematics subjects while, from Figure 2, it is seen that the greatest number of hours in the biological

TABLE 3

ALL GRADUATES

	Mean	St. Dev.
Math		
Credit	5.20	12.40
Non Credit	1.08	6.78
Bio-Physical Science		
Credit	2.95	9.37
Non Credit	0.29	2.57
Social Science		
Credit	2.95	8.48
Non Credit	0.50	4.86
Humanities		
Credit	1.78	6.65
Non Credit	0.11	1.26
Fine Arts		
Credit	0.37	3.11
Non Credit	0.04	0.63
Directly Related Courses		
Credit	2.35	10.07
Non Credit	1.20	7.47
Other		
Credit	3.18	11.56
Non Credit	1.79	8.73
Highest Degree earned 1 = AA, 2 = BA, 3 = MA, 4 = Ph.D.	1.29	0.80
Working toward another degree 1 = Yes, 2 = No.	1.76	0.45


Continuing Education Courses: All Graduates
Category: Mathematics
Credit Hours
Non-Credit Hours
Hours
10
9
8
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1
55
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Year of Graduation

Figure 1

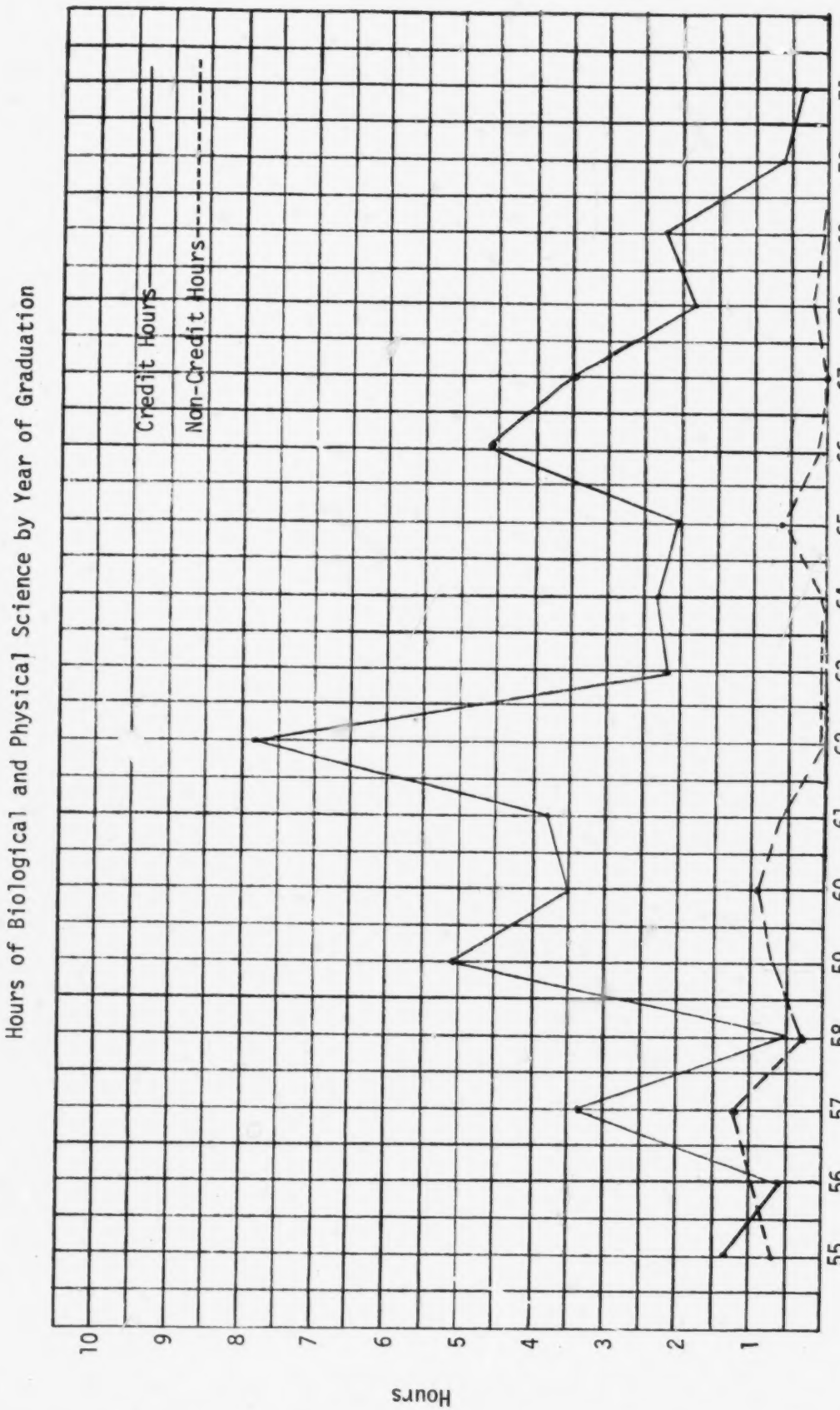

Hours of Biological and Physical Science by Year of Graduation
Credit Hours
Non-Credit Hours
Hours
10
9
8
7
6
5
4
3
2
1
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
Year of Graduation

Figure 2

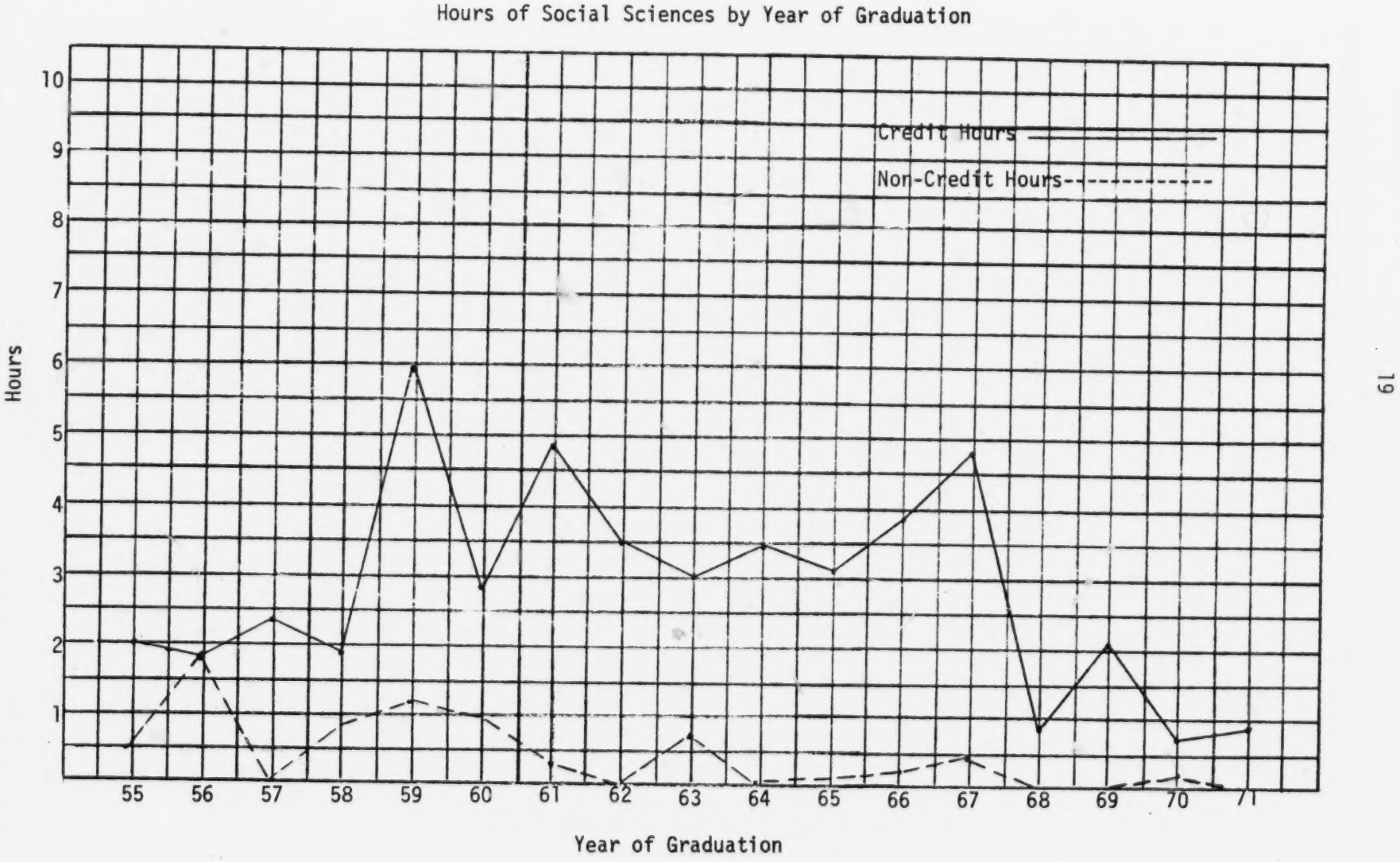
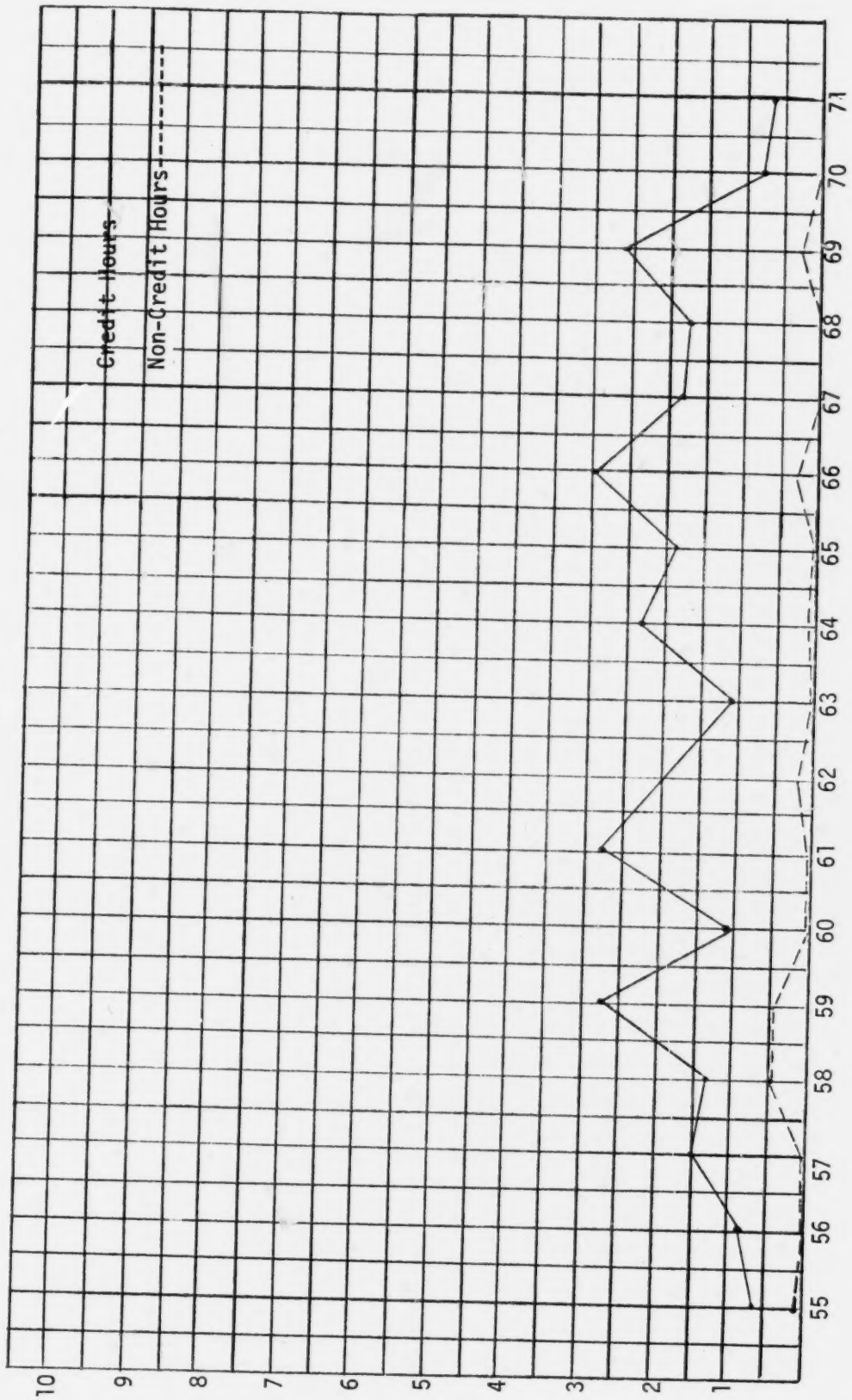

Hours of Social Sciences by Year of Graduation
Credit Hours
Non-Credit Hours
Hours
10
9
8
7
6
5
4
3
2
1
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
Year of Graduation

Figure 3


Hours of Humanities by Year of Graduation
Credit Hours
Non-Credit Hours
Hours
10
9
8
7
6
5
4
3
2
1
55
56
57
58
59
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63
64
65
66
67
68
69
70
71
Year of Graduation

Figure 4

Hours of Fine Arts by Year of Graduation

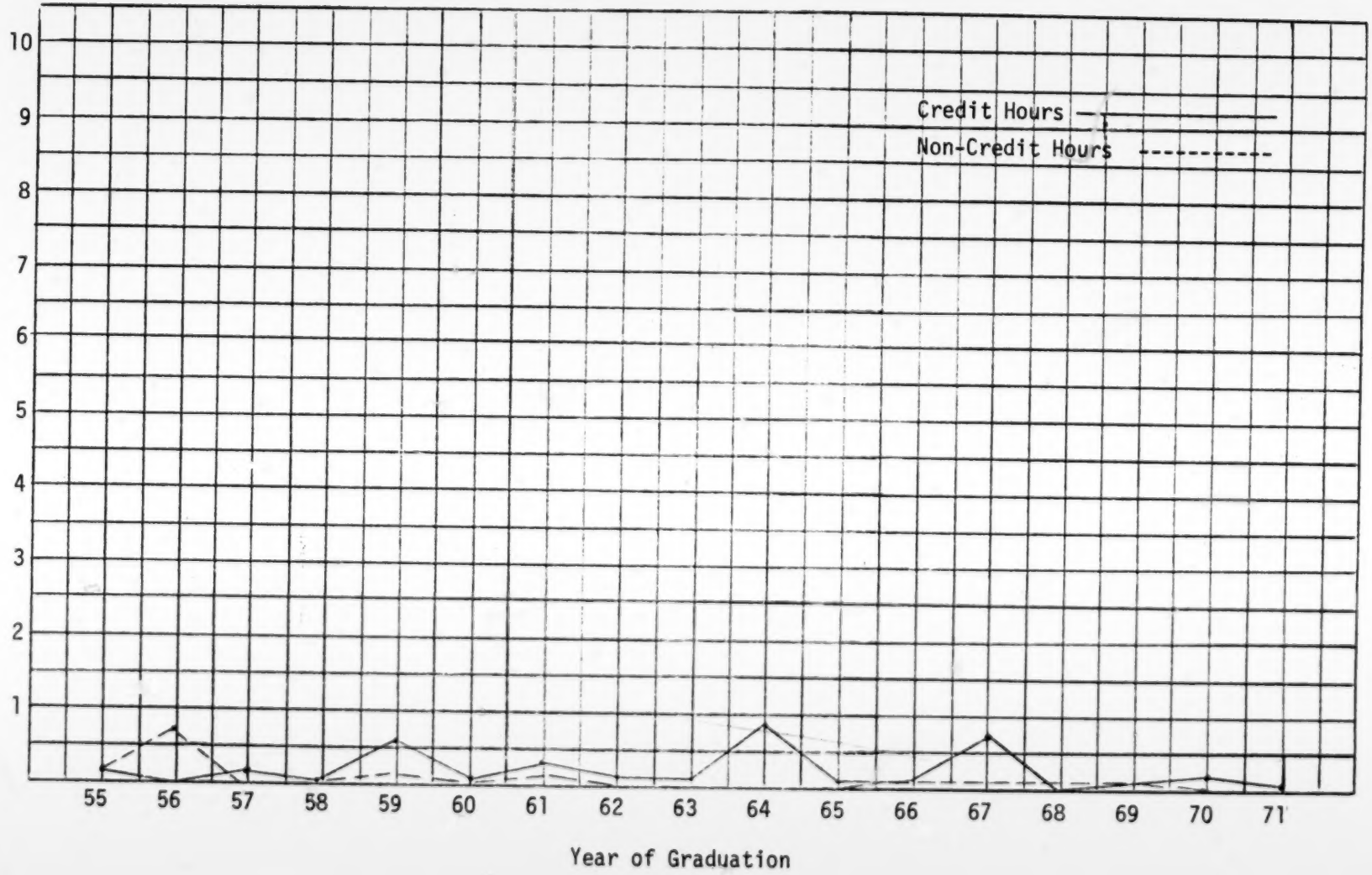


Figure 5

HOURS OF DIRECT RELATED BY YEAR OF GRADUATION

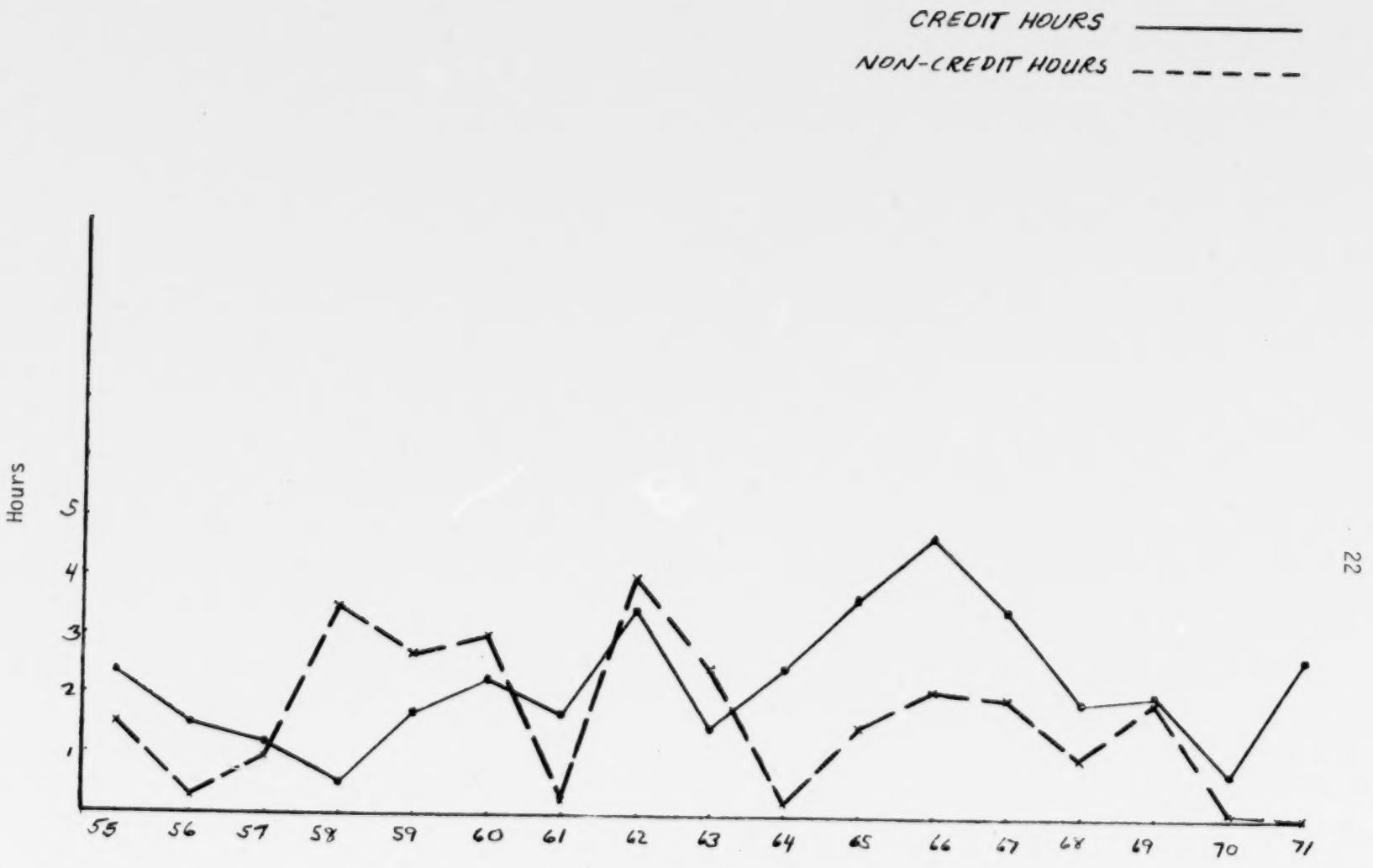


Figure 6

HOURS OF OTHERS BY YEAR OF GRADUATION

Figure 7

physical sciences were taken by the 1959, 1962, and 1966 graduates. Courses taken in the rubric of social sciences seem to be uniformly distributed, as a whole, for the graduates of 1959 through 1967 (see Figure 3). Humanities and fine arts (displayed in figures 4 and 5) had low completion means. In response to the query relating to enrollment in course directly related to their associate degree programs, the 1962 through 1968 graduates indicated the highest credit hour enrollment (Figure 6). The category "other courses" (Figure 7) had a credit hour enrollment higher than found for the directly related courses mentioned above. It would be of interest to determine why these courses were taken, as opposed to those that would be more closely related to their work.

II. DDT Graduates

The average credit hours of continuing education courses taken by the 17 drafting design technology graduates are illustrated in Figures 8 through 14.

The greatest amount of course credit was taken in the mathematics area. In the questionnaire, this was stated as including "algebra, geometry, calculus, differential equations, statistics, etc." The average exceeded 10 credit hours for the three consecutive classes of 1961 through 1963. Also of interest is, with the exception of one graduation class (1960), the amount of non-credit mathematics courses taken was negligible. Apparently, the sample considered mathematics as a type of course they wanted to take only on a "for credit" basis.

In the biological and physical science category (which includes physics, chemistry, geology, botany, zoology, etc.), only the 1962

class had an average greater than 10 hours. As was the case with mathematics, virtually no non-credit courses were taken in this category. The perceived need for courses in the biological and physical science area, either for maintenance of one's level of expertise in the field or for job advancement purposes, is apparently not as strong as was found for mathematics.

The rate of course taking in the social sciences category (sociology, history, psychology, anthropology, economics, political science, etc.) was found to exceed the rate for the biological and physical sciences area for 14 of the 17 years (see Figure 10). With the exception of the earlier classes, virtually all of these were "for credit" courses. The frequency with which the graduates pursued credit courses in the social sciences indicate they perceived this area of study as being of some importance to them, which ties in with the findings (Gillie, 1973) that these graduates had jobs that were primarily people oriented (the scale from which they chose included data, people and things.

The average number of credit hours taken in the humanities (English literature, foreign language, philosophy, etc.) and fine arts (music, painting, sculpturing, ceramics, etc), were low for all classes (see Figures 11 and 12). The same trend was observed for over half of the graduation groups for courses categorized as being directly related to their associate degree program (see Figure 13). The highest averages were found for the 1962 through 1967 classes. This is the only category in which the non-credit courses averages were nearly as high as those for the credit courses for about half of the seventeen years.

Continuing Education Courses: DDT Graduates

Category: Math

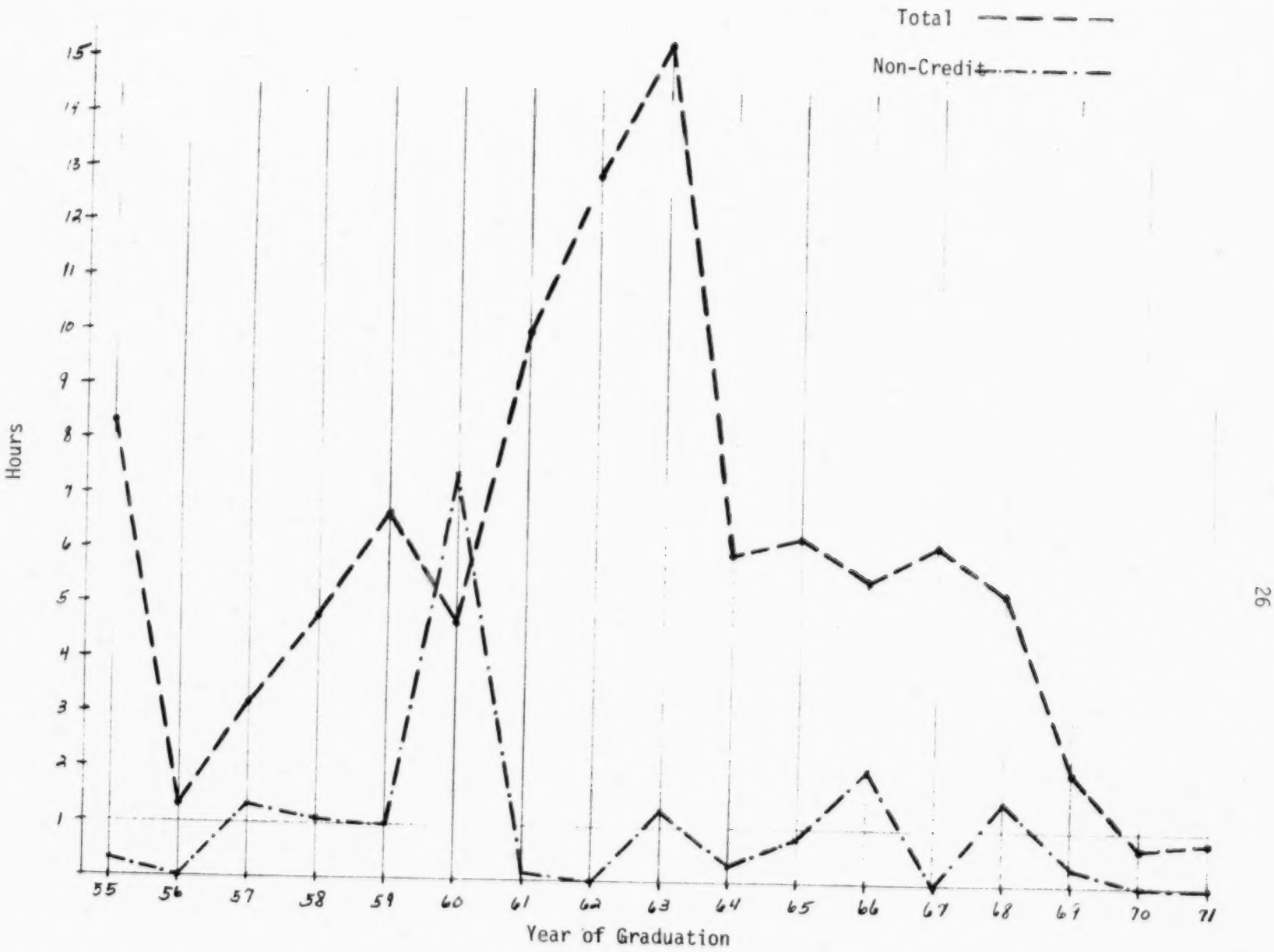


Figure 8

Continuing Education Courses: DDT graduates
Category: Biological and Physical Sciences

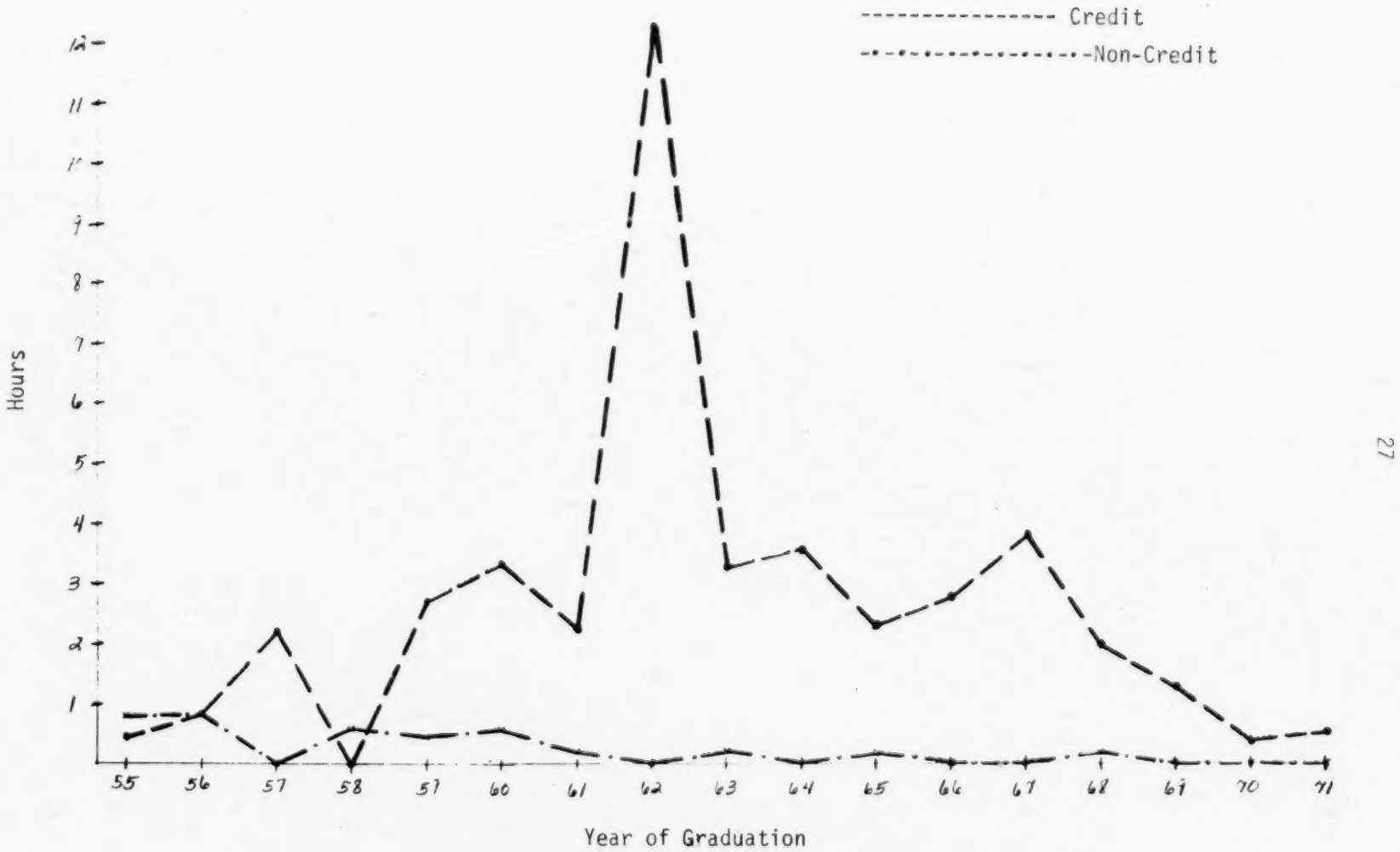


Figure 9

Continuing Education Courses: DDT Graduates
Category: Social Sciences

Credit----------

Non-Credit- - - - - - - - -

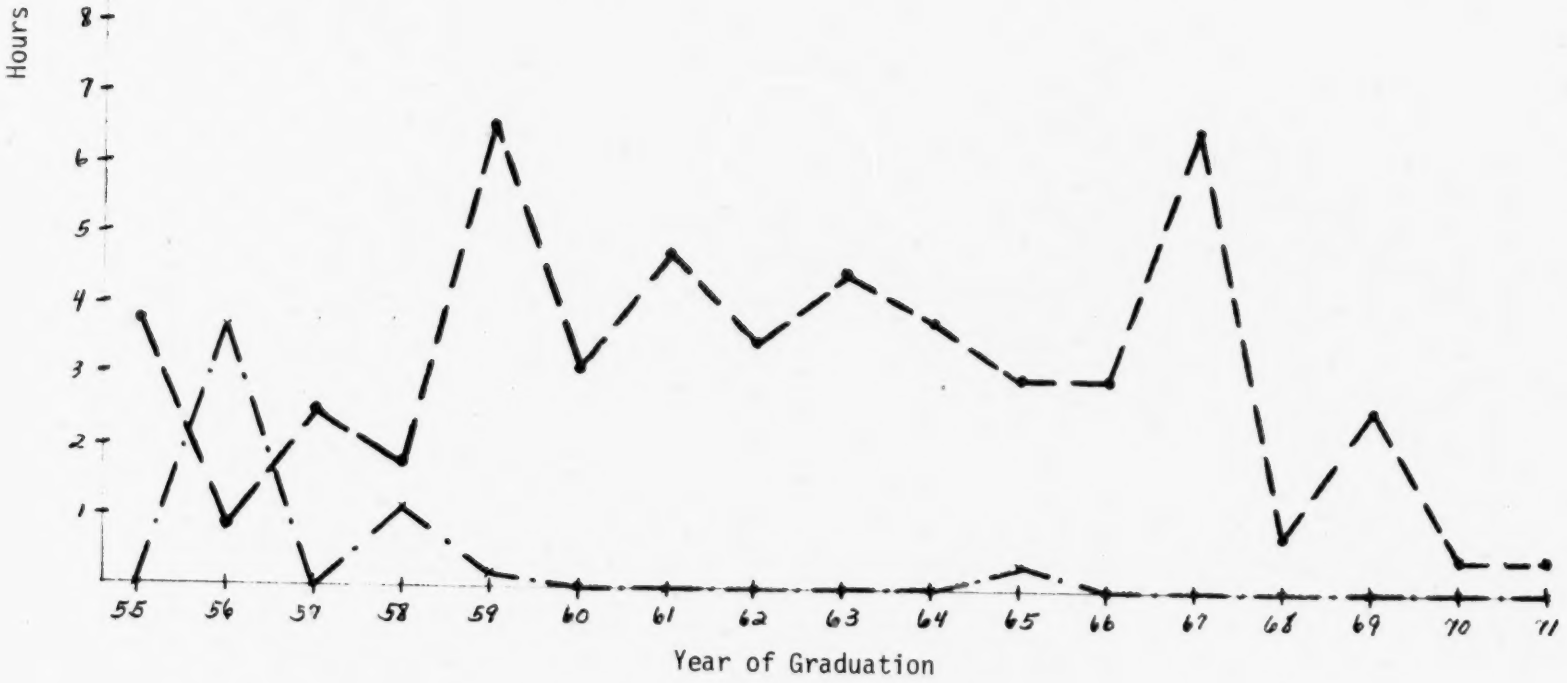


Figure 10

Continuing Education Courses: DDT Graduates

Category: Humanities

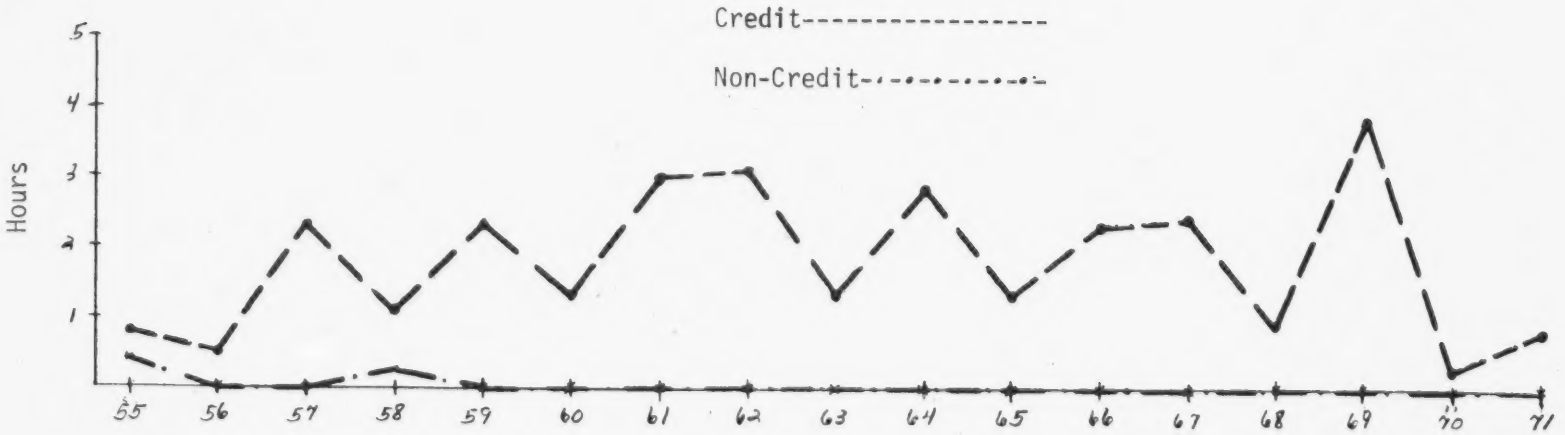


Figure 11

Continuing Education Courses: DDT Graduates

Category: Fine Arts

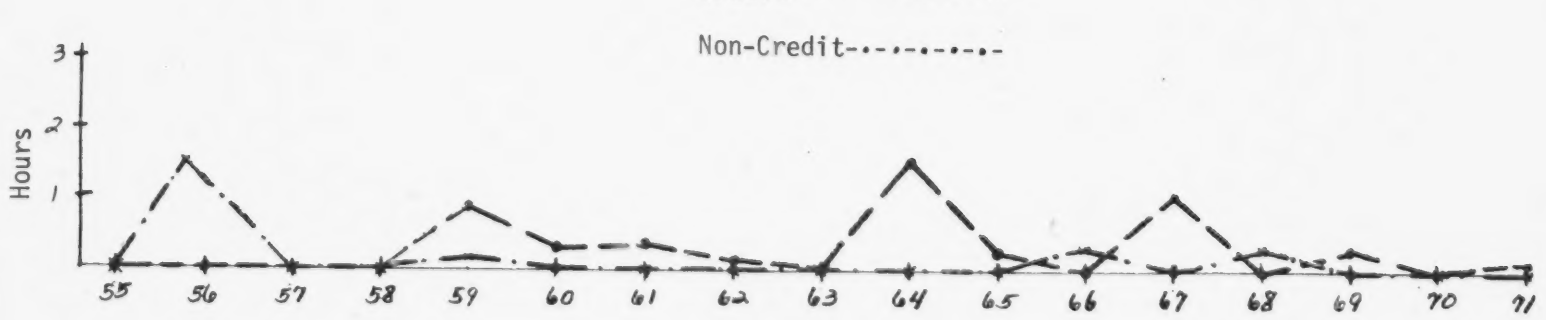


Figure 12

Continuing Education Courses: DDT Graduates

Category: Directly Related Courses

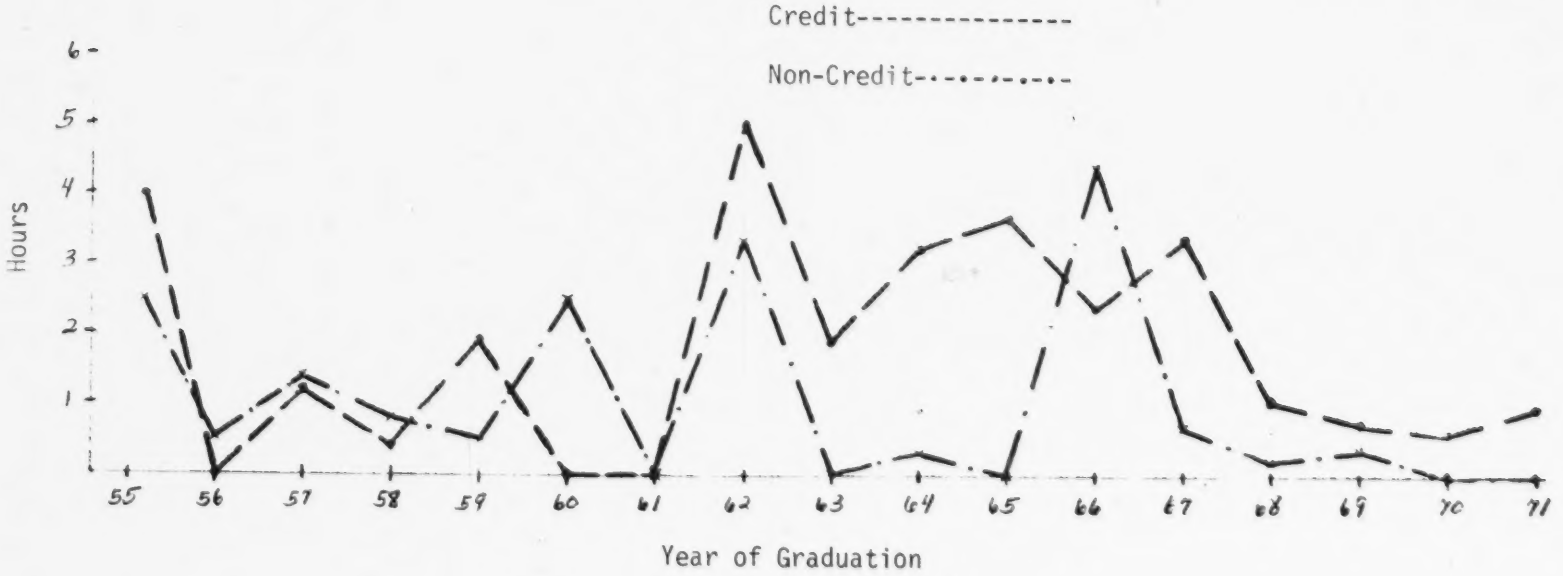


Figure 13

Figure 14 depicts the averages for "other courses." Comparatively high peaks were found for the graduates of 1955, 1959, and 1969. Also, the averages for non-credit course taking was found to be higher than most of the other categories.

III. EET Graduates

Figures 15 through 21 depict the history of continuing education course taking of the 17 EET graduation groups (1955-1971).

As was the case with the DDT groups, the courses within the rubric of mathematics received the greatest continuing education enrollment as a whole. Two groups, the graduation classes of 1961 and 1963, averaged more than 10 credit hours each. Also, several of the classes had comparatively high non-credit course averages (classes of 1958, 1962, 1963). It would be interesting to determine the context within which the "non-credit" courses were taken by these groups and why they were selected instead of the "for credit" variety. Figure 15 depicts these relationships.

The mean credit hours for courses in the biological and physical sciences were consistently lower than the averages reported for mathematics. The peak of "for credit" courses in this area occurred for the graduation classes of 1959, 1963, and 1966. Only the 1963 class had a sizable mean for "not for credit" courses in the biological and physical sciences area. Figure 16 displays these relationships.

Although courses in the social sciences area were not the most often taken ones for all graduation groups, this was the case with the class of 1963 with a mean of nearly 20 credit hours for "credit" courses and nine hours for "non-credit" courses (see Figure 17).

Continuing Education Courses: DDT Graduates
Category: Other Courses

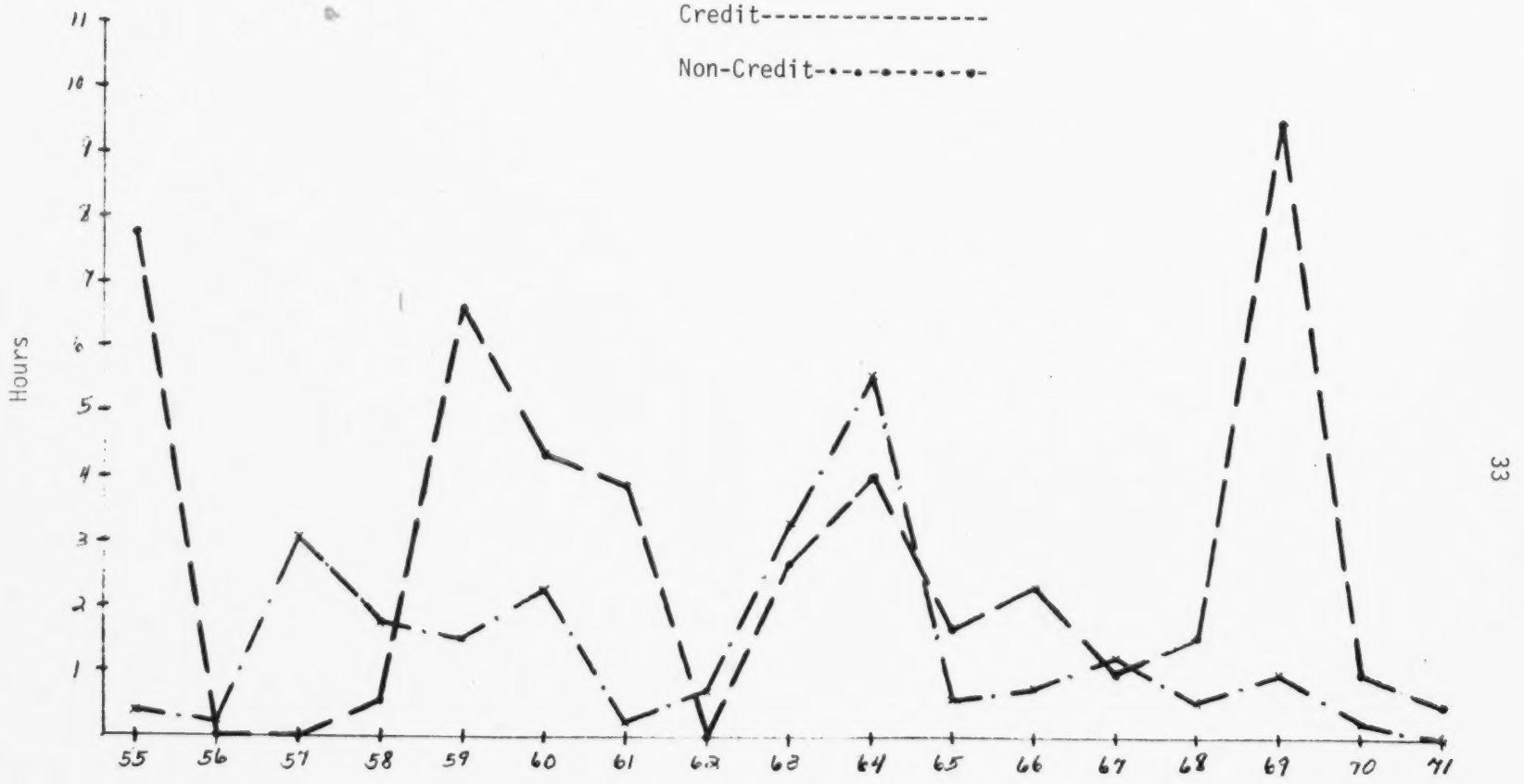


Figure 14

Continuing Education Courses: EET Graduates

Category: Math

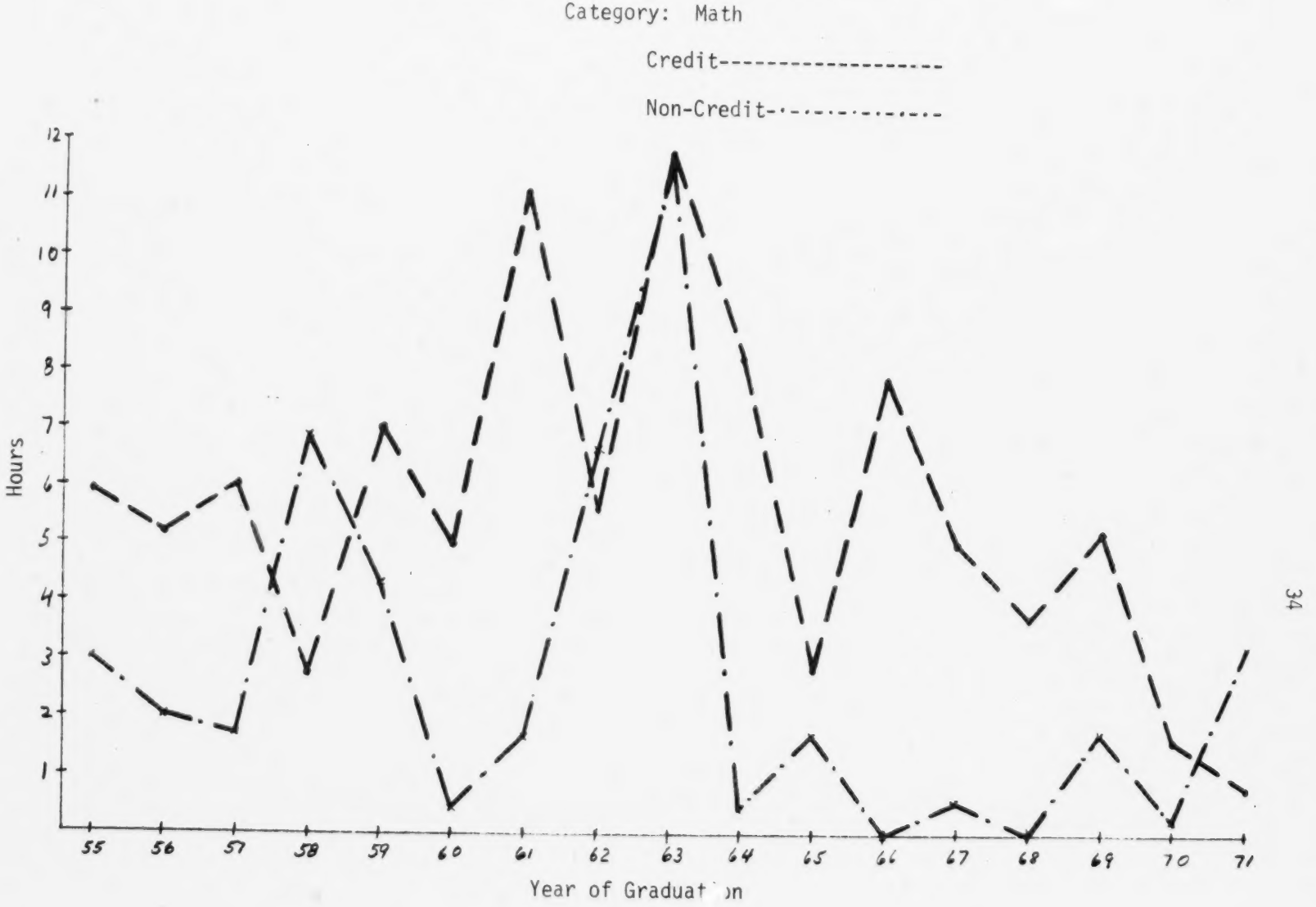


Figure 15

Continuing Education Courses: EET Graduates
Category: Biological and Physical Sciences

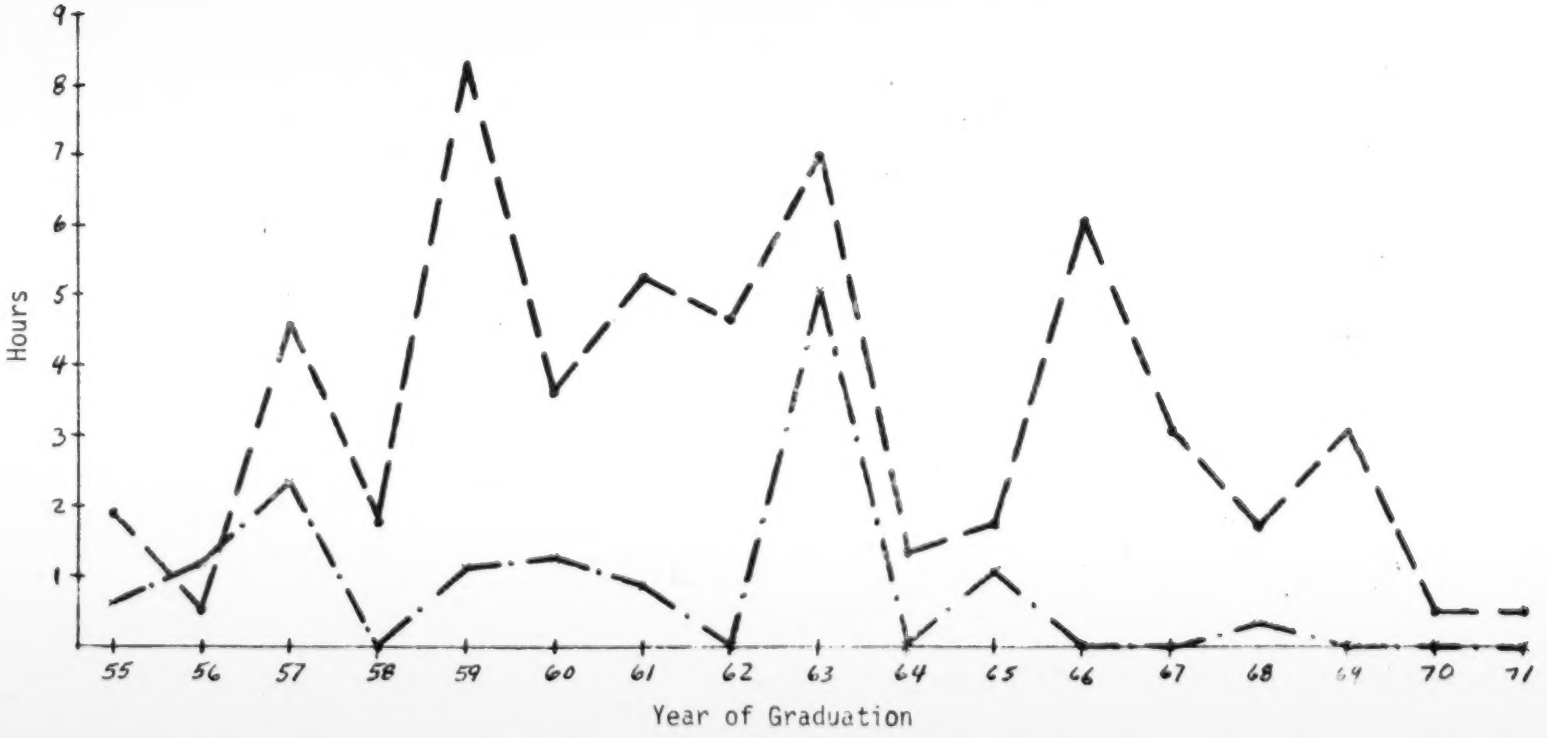


Figure 16

Continuing Education Courses: EET Graduates

Category: Social Sciences

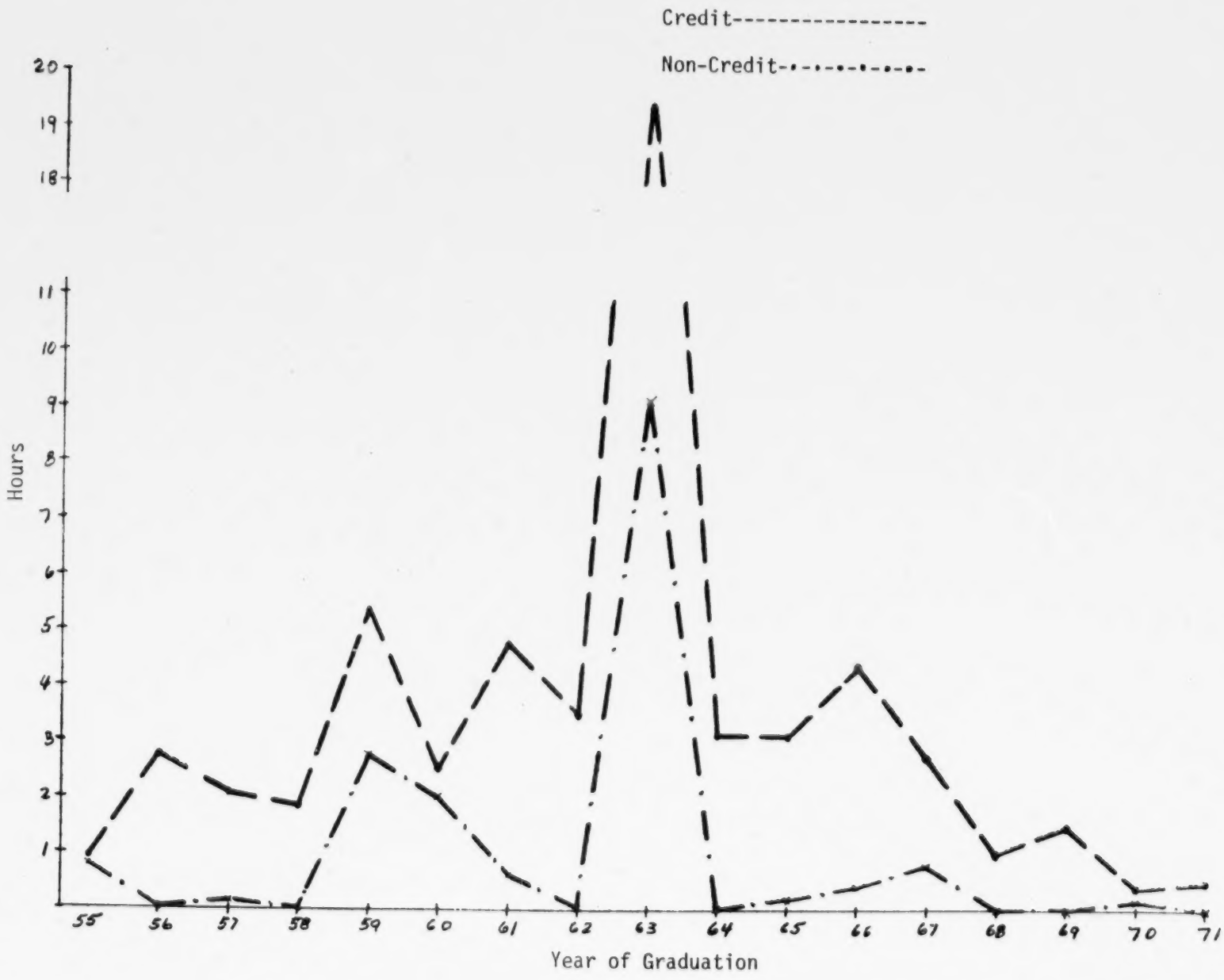


Figure 17

With the exception of the 1963 group, the average hours taken in the social sciences category was not high for any particular group, with means below five credit hours for all but two of the 17 groups. Non-credit type courses were even less popular.

The 1963 class again peaked at both credit and non-credit courses for courses included within the rubric of humanities. Other than that single class, humanities type courses were not a major continuing education endeavor by EET graduates (see Figure 18).

Continuing education courses in the fine arts group were virtually ignored by these graduates, as depicted in Figure 19.

A curious mixture of credit and non-credit continuing education courses the rubric of courses directly related to their associate degree program was found. Although the average number of course enrollments was comparatively high in only two cases (non-credit courses for the 1958 group and credit courses for the class of 1966), there were a few graduation groups in which the "non-credit" courses taken exceeded the "credit" courses (see Figure 20).

As shown in Figure 21, the same kind of mixture between credit and non-credit continuing education courses was observed in the "other courses" category. Course taking within this category was substantial for one of these classifications for the 1958, 1959, and 1963 classes.

IV. Other Graduates

Included within this category are the graduates of the business, surveying technology, retailing, and forestry technology curriculums. Since these programs had only three or four graduation classes, their history of continuing education courses within the broad rubric des-

Continuing Education Courses: EET Graduates
Category: Humanities

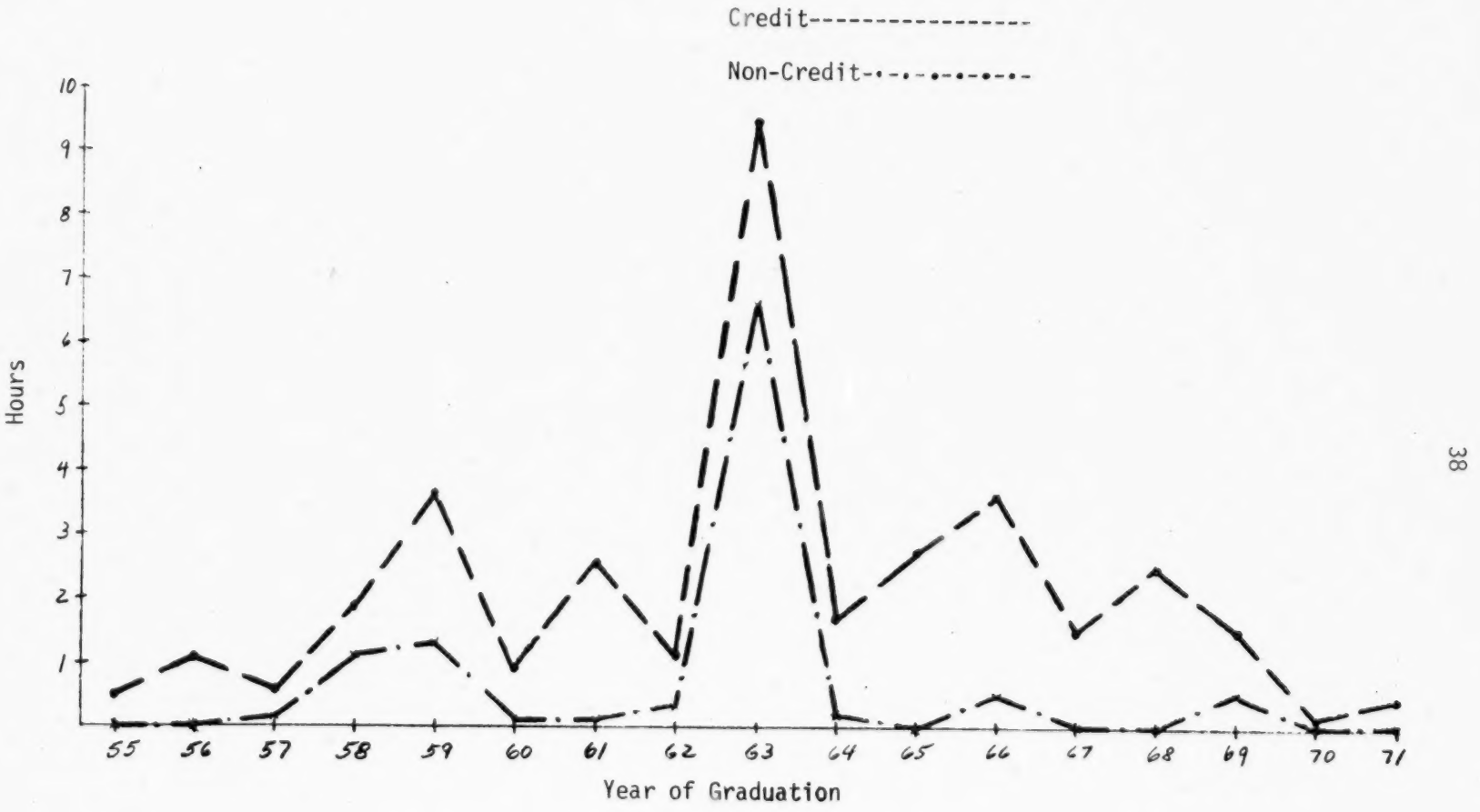


Figure 18

Continuing Education Courses: EET Graduates

Category: Fine Arts

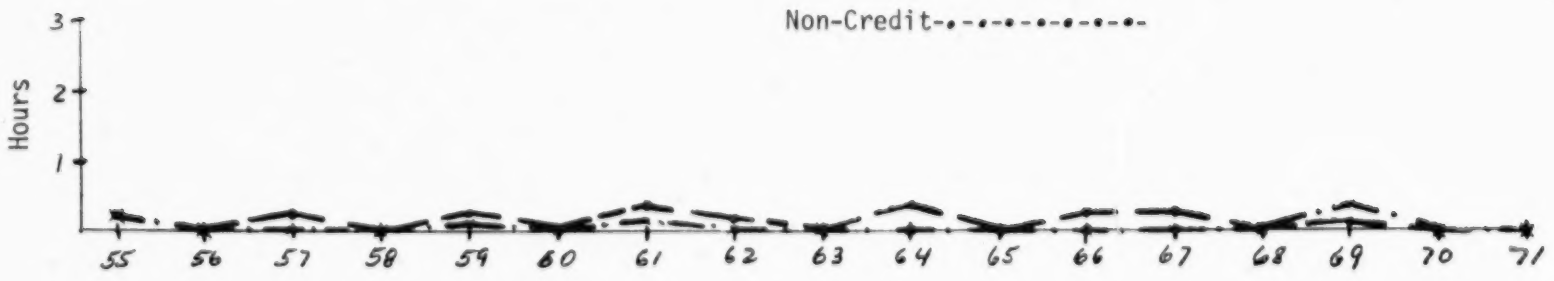


Figure 19

Continuing Education Courses: EET Graduates

Category: Directly Related Courses

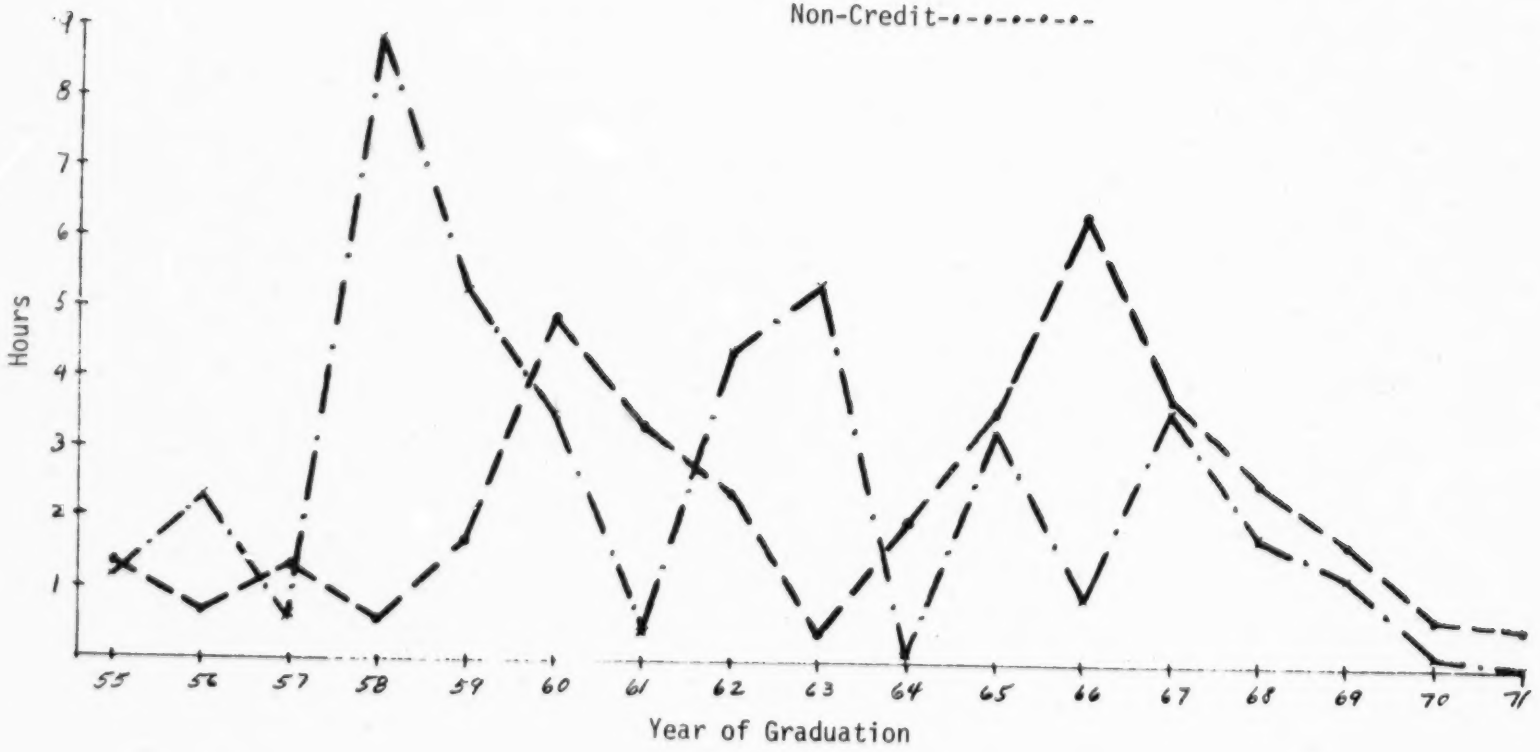


Figure 20

Continuing Education Courses: EET Graduates

Category: Other Courses

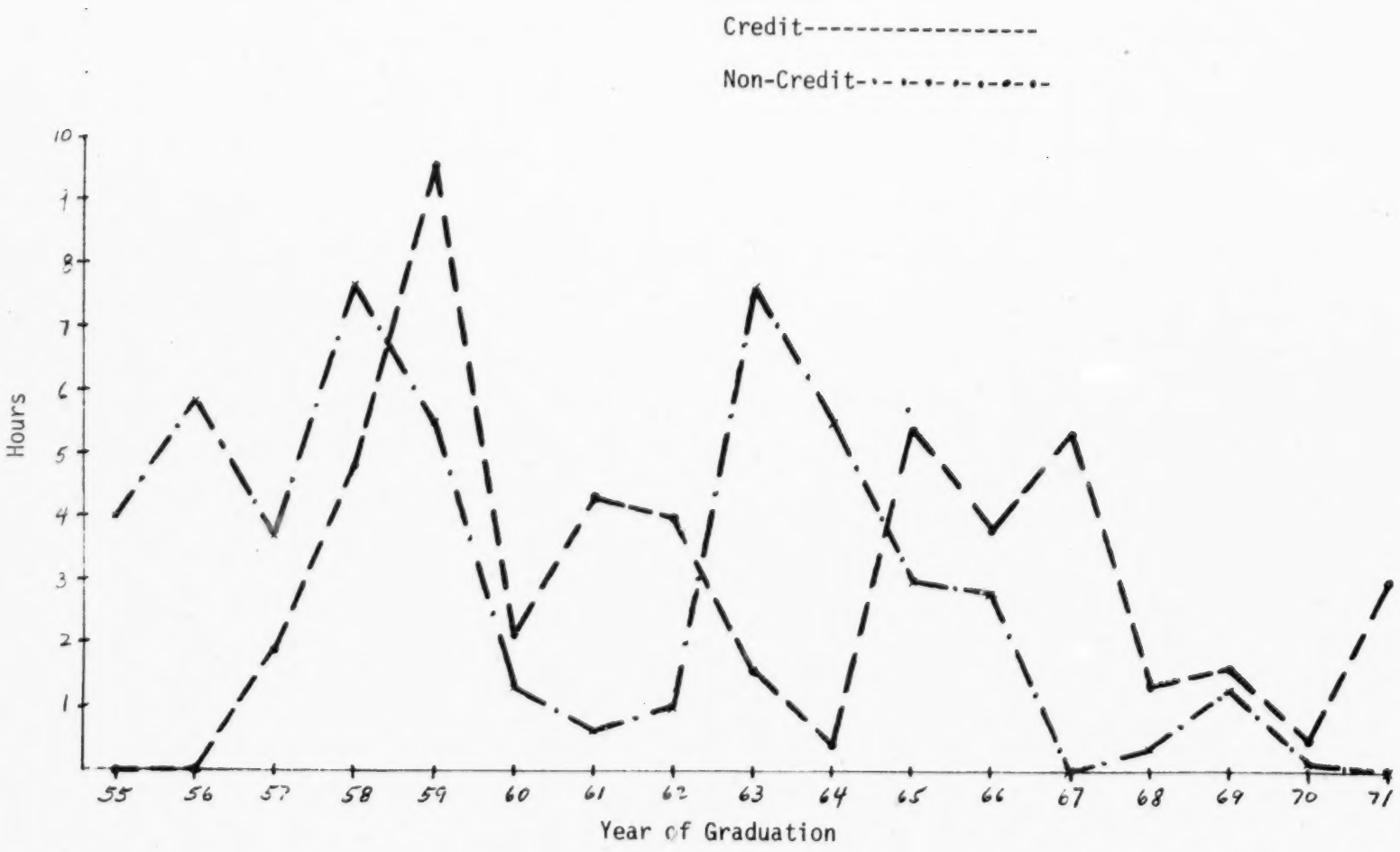


Figure 21

cribed in the preceding paragraphs is brief. Those classes in the several curriculums with averages of less than three credit hours are not discussed herein. Outstanding averages were found in social sciences credit courses for the 1969 business graduates (see Figure 24), courses directly related to associate degree programs by 1971 business graduates (Figure 27), mathematics for 1970 surveying technology class (Figure 29), "other courses" for the 1970 retailing class (Figure 37), mathematics for the 1970 forestry technology class (Figure 38), and courses directly related to their associate degree programs by the 1970 forestry technology class (Figure 39). These averages are shown in Figures 22 through 39.

V. Continuing Education Profiles for the EET Graduation Groups

The continuing education profile for each of the 17 graduation classes are shown in Figures 40 through 56. The course areas covered are those described in the introductions section. Each profile displays the number of hours of credit and non-credit courses, and the sum of these two components for each of the course categories. The "dot-dash-dot" lines are used to designate the non-credit hours, the "dash-dash" lines for the number of hours for credit courses and the solid line represents the sum of the two. The solid line profile displays the entire continuing education mean experience for each of the seven areas per graduation class and the following analysis is based upon it.

Examination of the seven course area profiles for the EET graduation groups reveal some very clear-cut salient points. The continuing education emphasis for the classes of 1955 (Figure 40),

Continuing Education Courses: Business Graduates

Category: Math

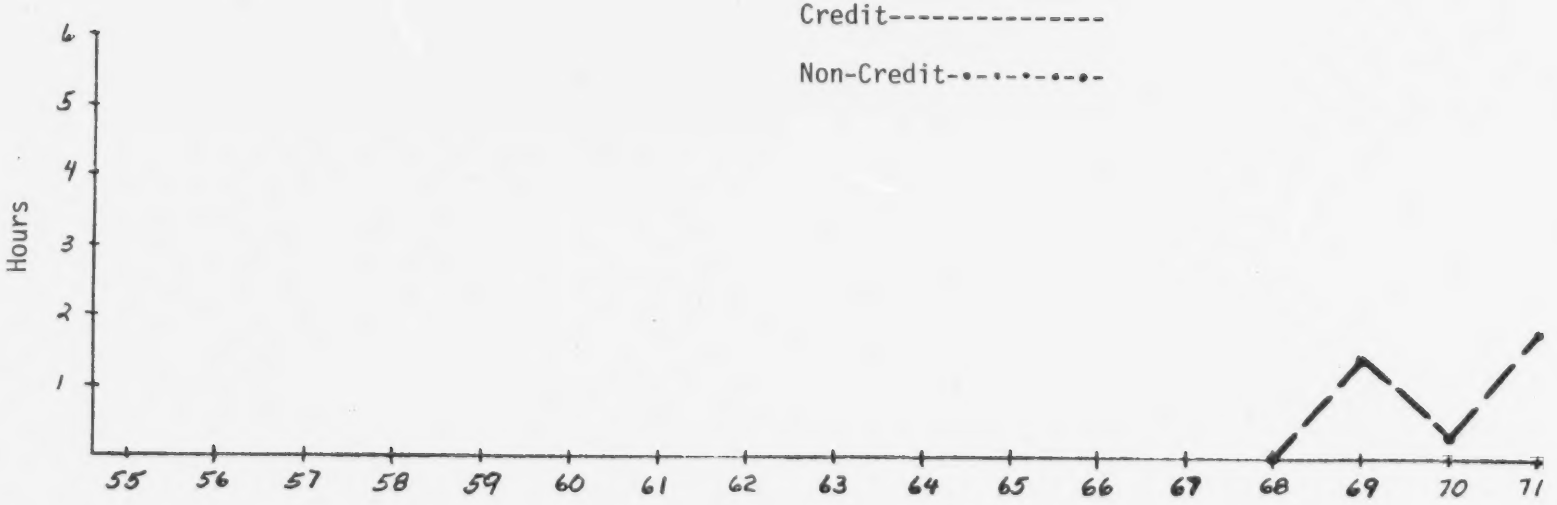
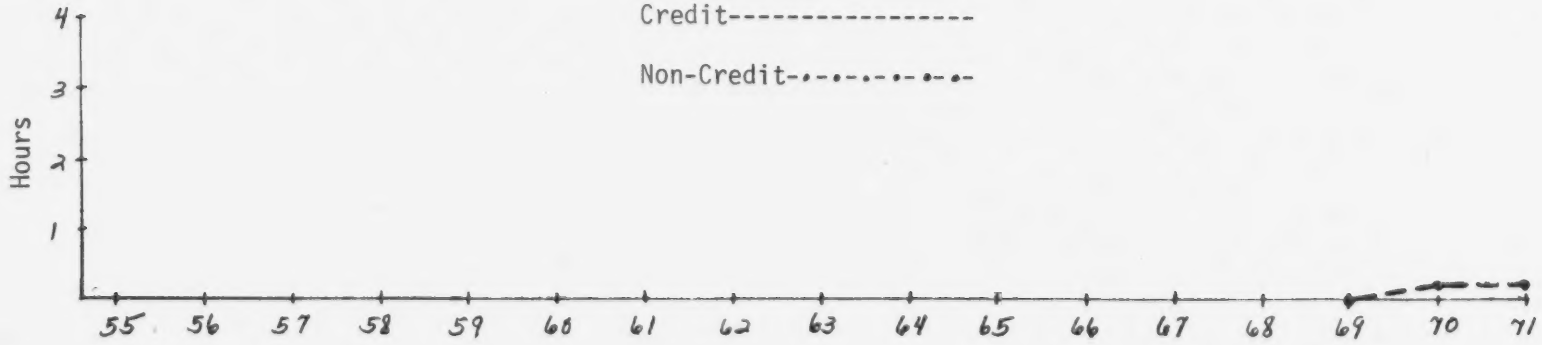


Figure 22

Continuing Education Courses: Business Graduates
Category: Biological and Physical Sciences



Year of Graduation
Figure 23

Continuing Education Courses: Business Graduates
Category: Social Sciences

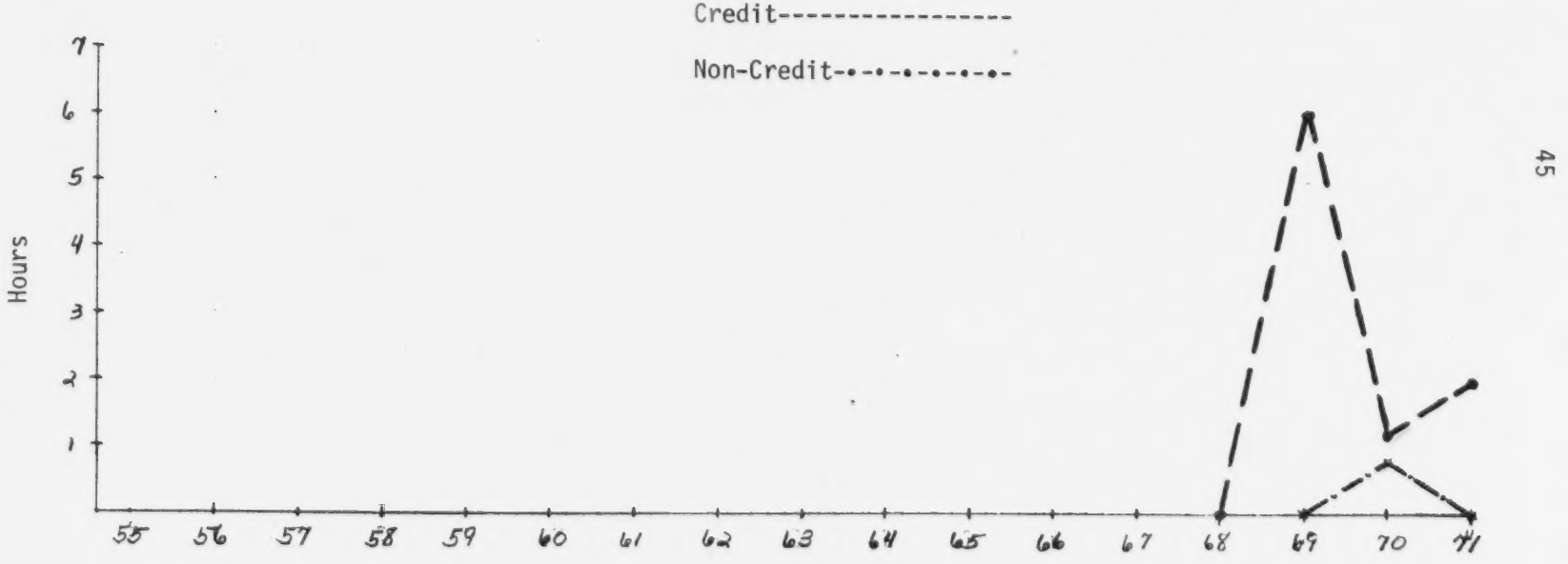


Figure 24

Continuing Education Courses: Business Graduates
Category: Humanities

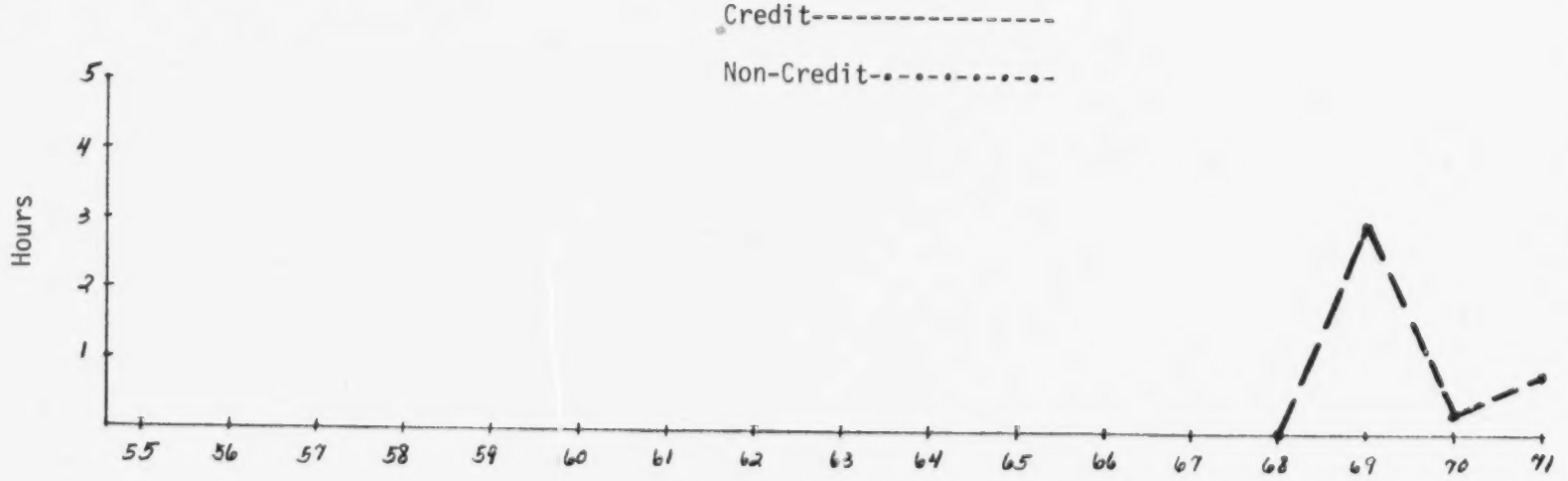


Figure 25

Continuing Education Courses: Business Graduates
Category: Fine Arts

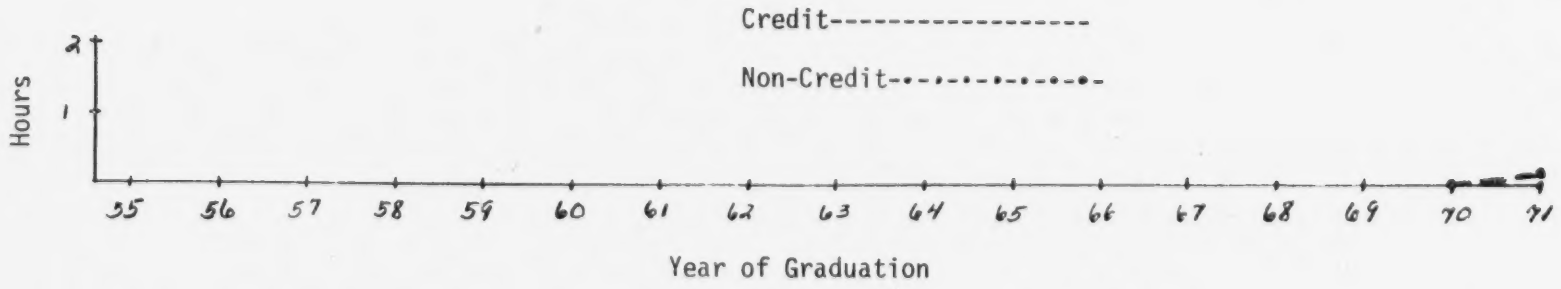


Figure 26

Continuing Education Courses: Business Graduates
Category: Directly Related Courses

Credit----------

Non-Credit-.-.-.-.-.-

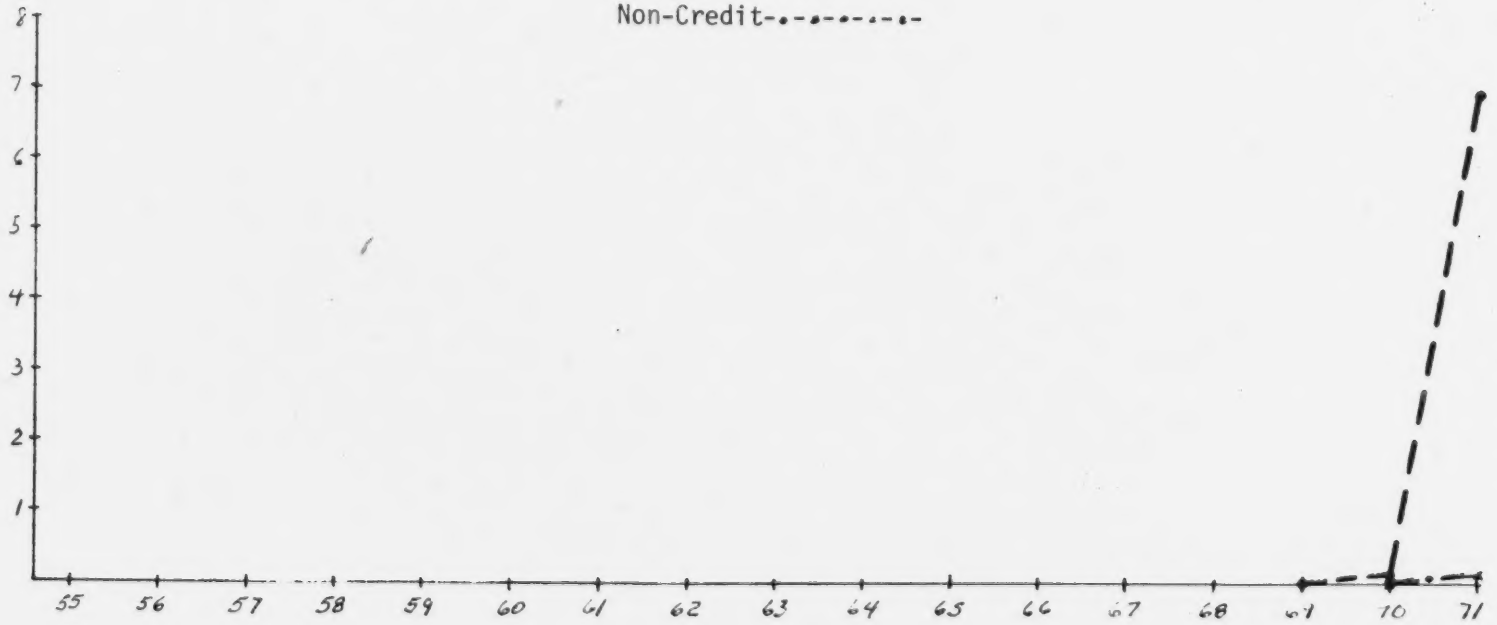


Figure 27

Continuing Education Courses: Business Graduates

Category: Other Courses

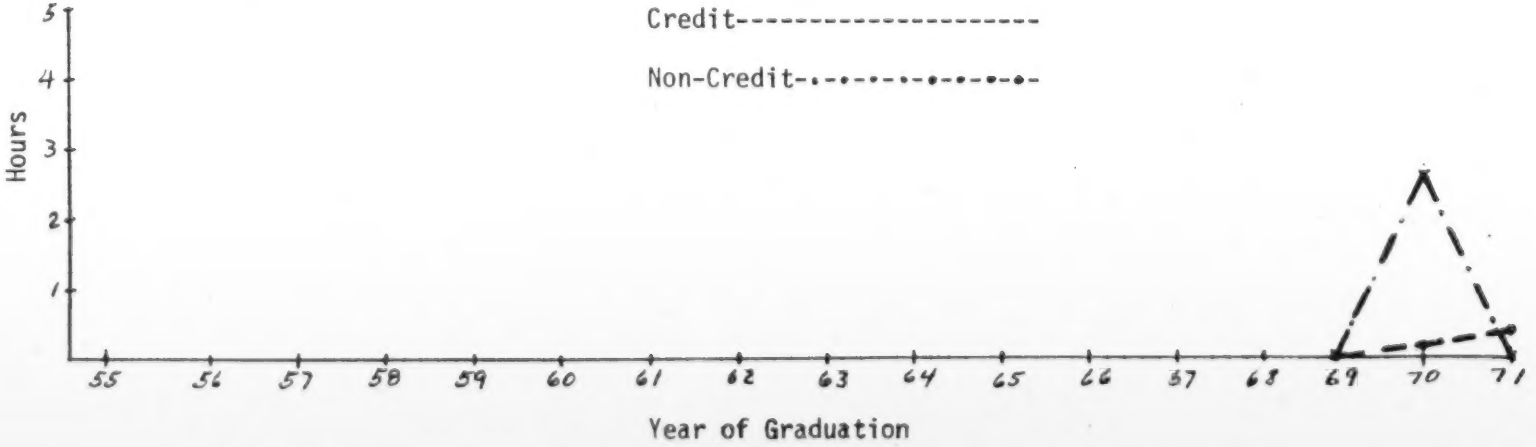


Figure 28

Continuing Education Courses: Survey Technology Graduates

Category: Math

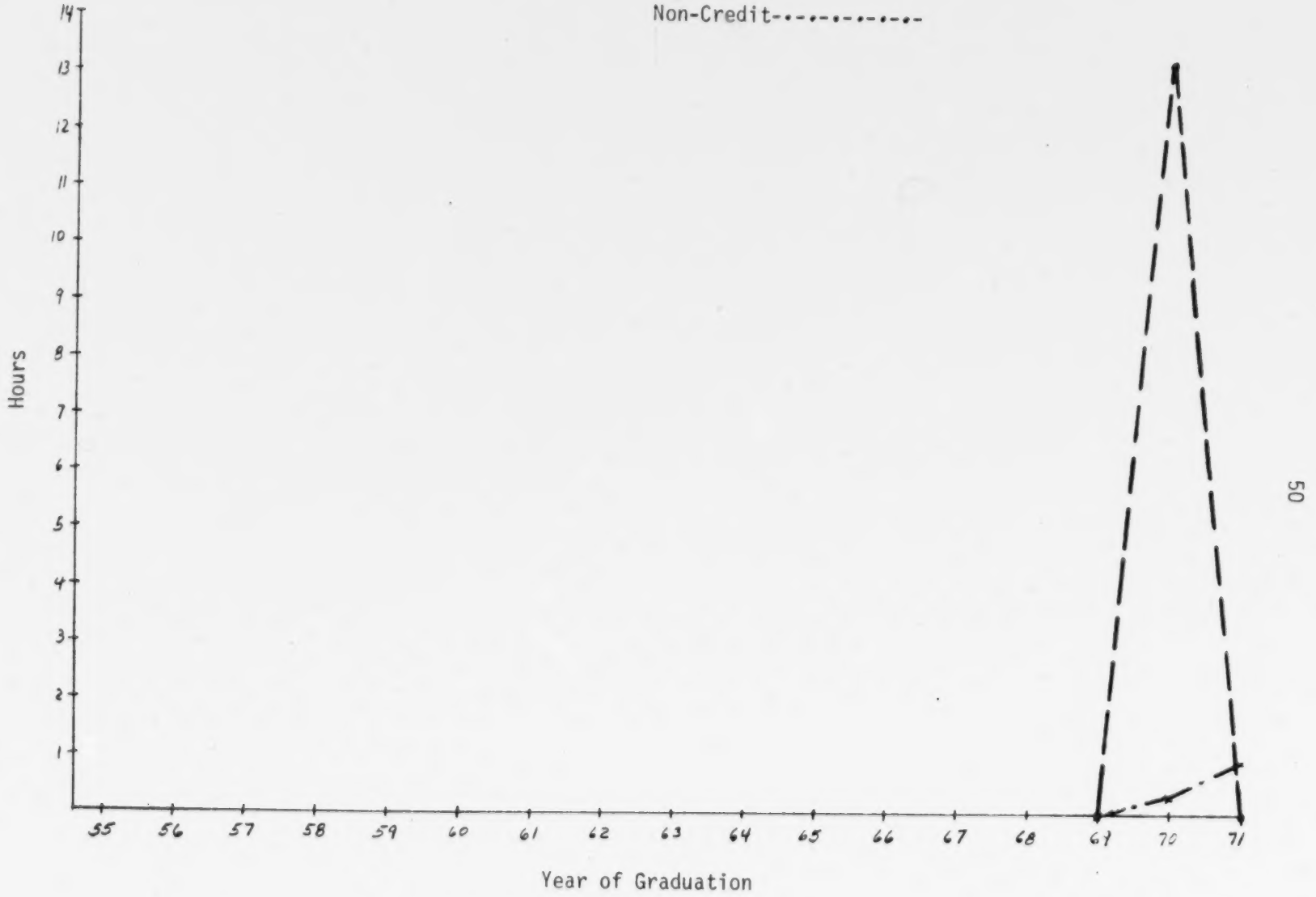


Figure 29

Continuing Education Courses: Survey Technology Graduates
Category: Biological and Physical Science

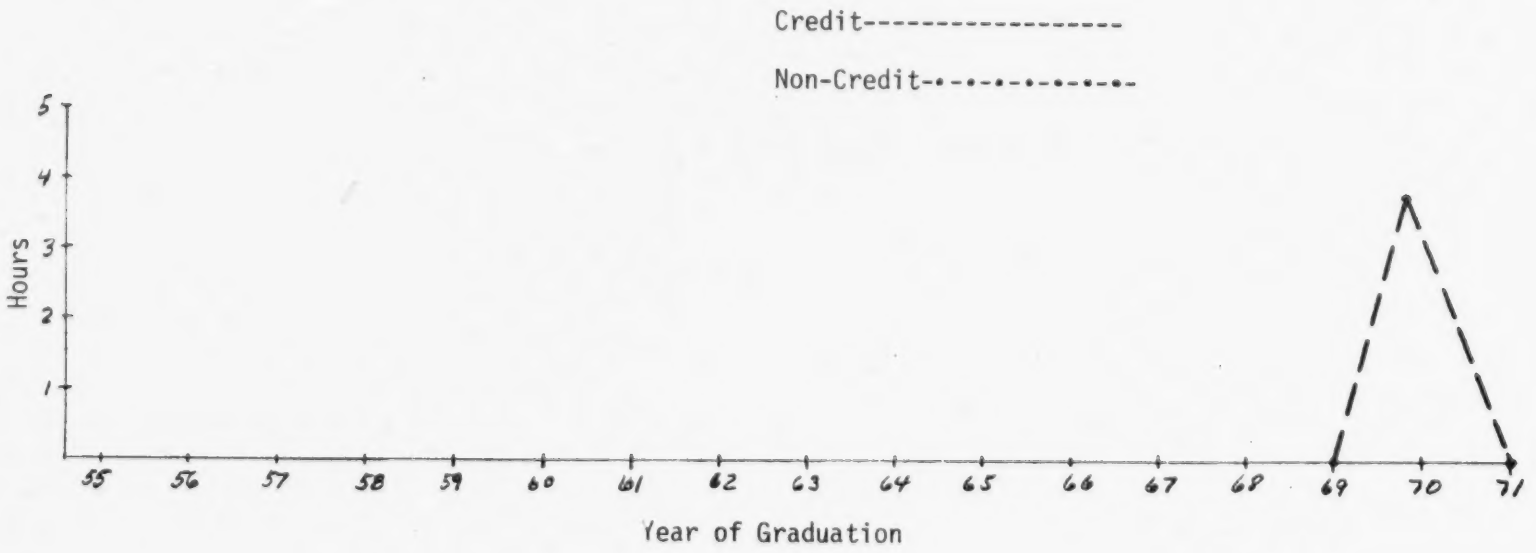


Figure 30

Continuing Education Courses: Survey Technology Graduates
Category: Social Sciences

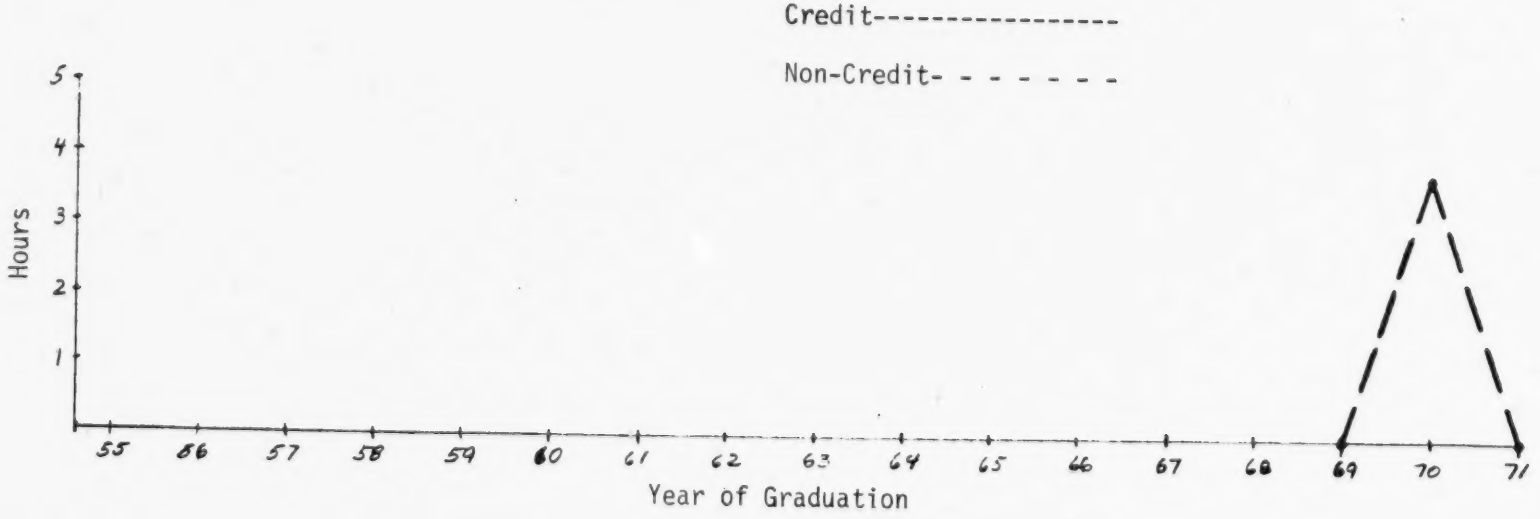


Figure 31

Continuing Education Courses: Survey Technology Graduates

Category: Humanities

Figure 32

Continuing Education Courses: Survey Technology Graduates
Category: Fine Arts

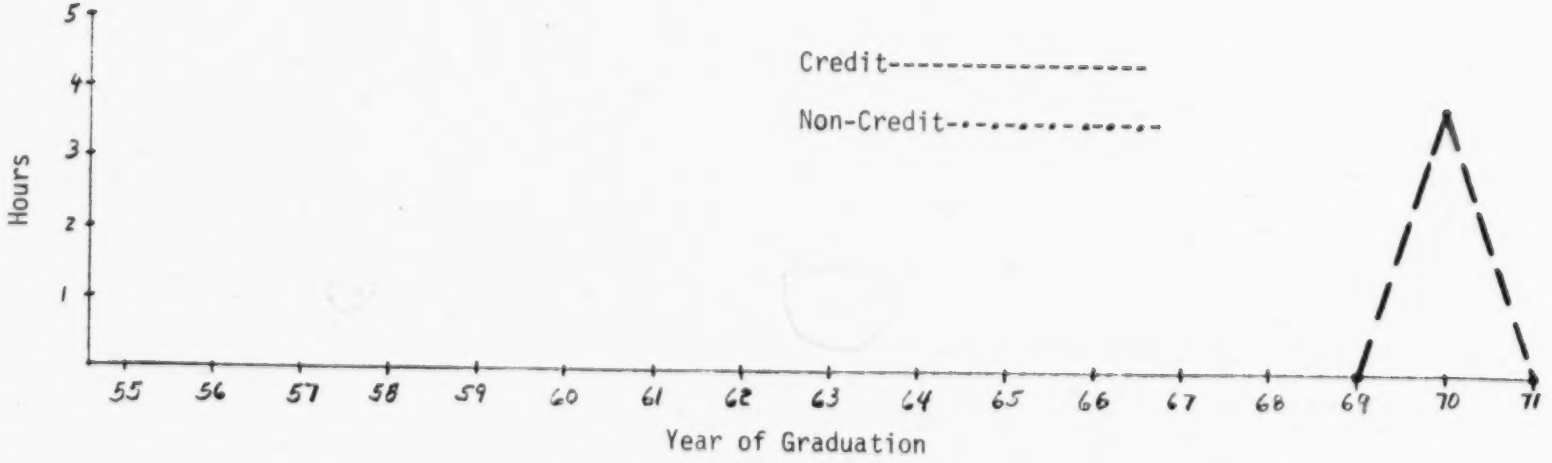


Figure 33

Continuing Education Courses: Survey Technology Graduates
Category: Directly Related Courses

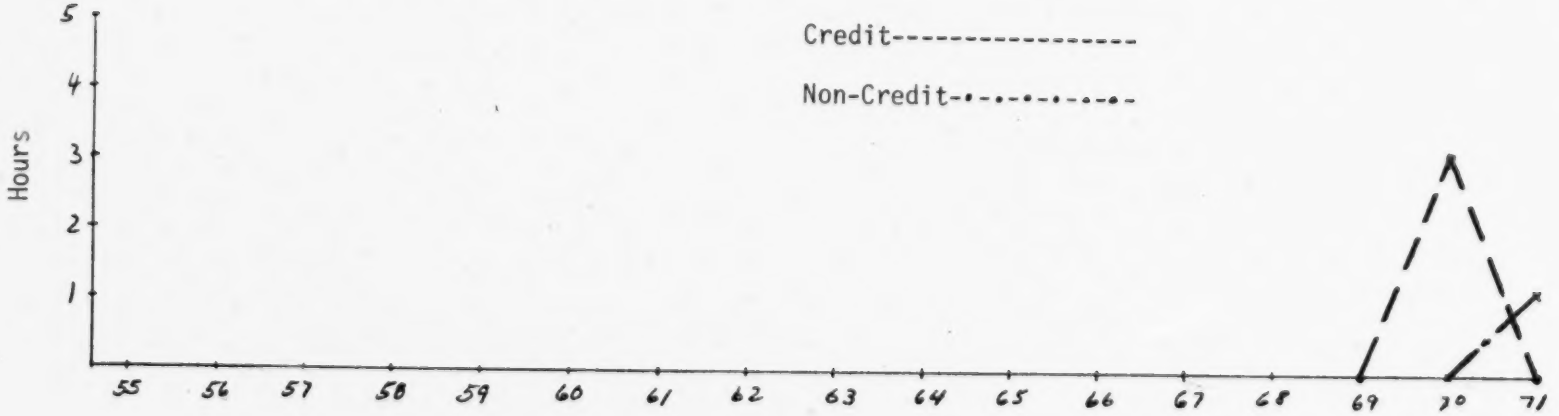


Figure 34

Continuing Education Courses: Retailing Graduates

Category: Social Sciences

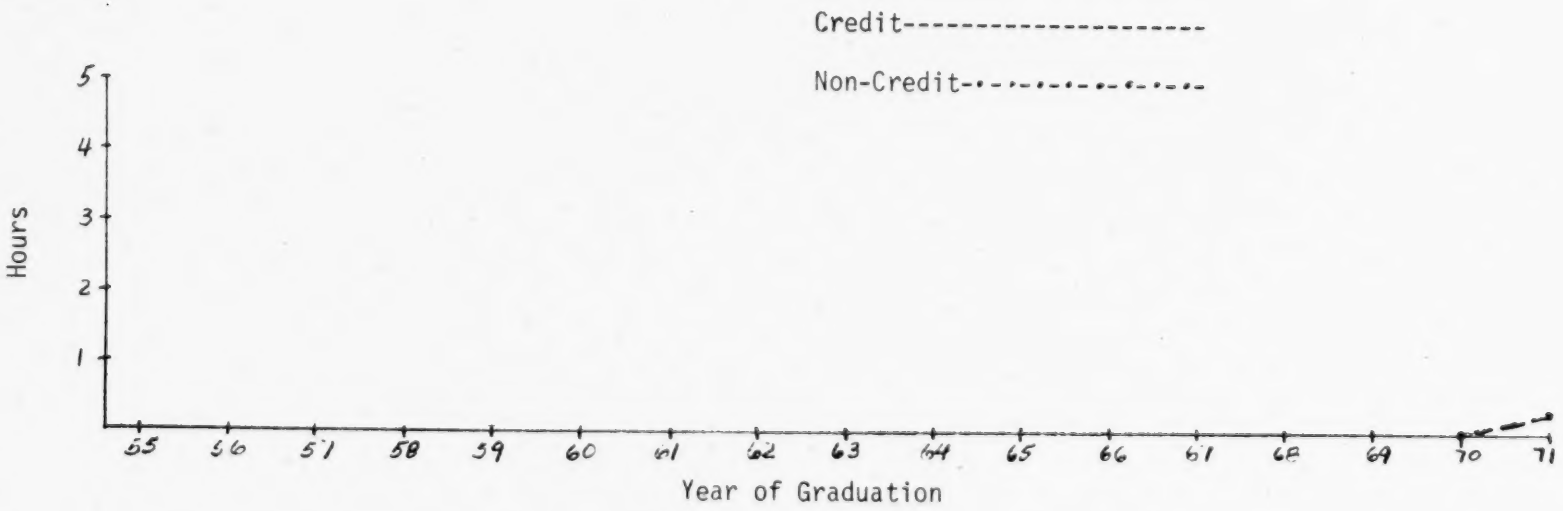


Figure 35

Continuing Education Courses: Retailing Graduates

Category: Humanities

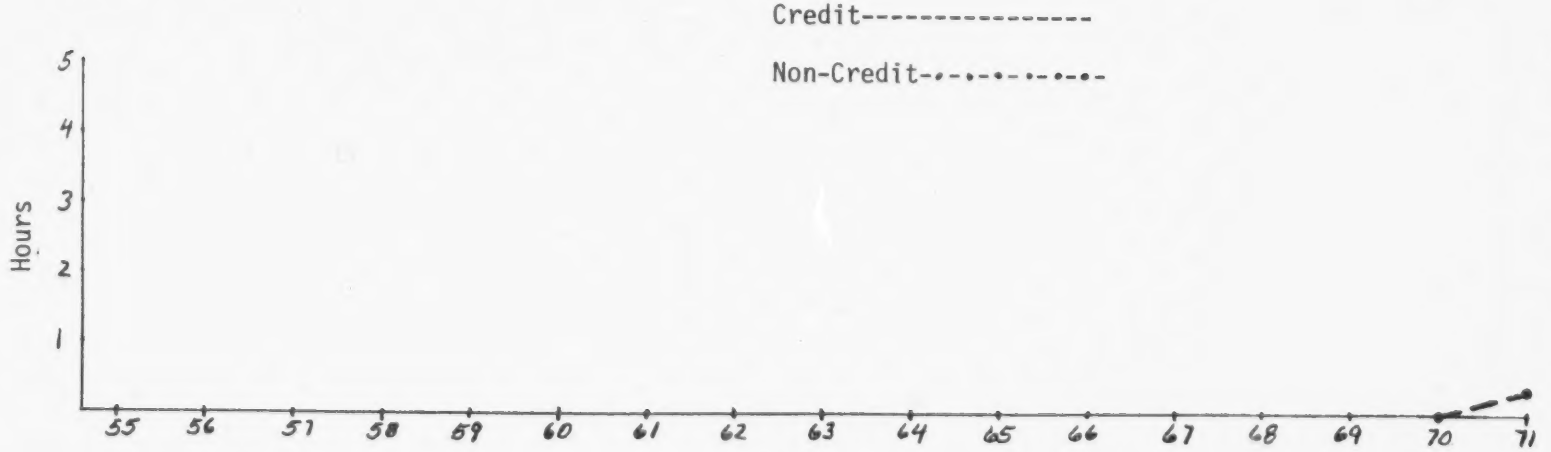


Figure 36

Continuing Education Courses: Retailing Graduates
Category: Other Courses

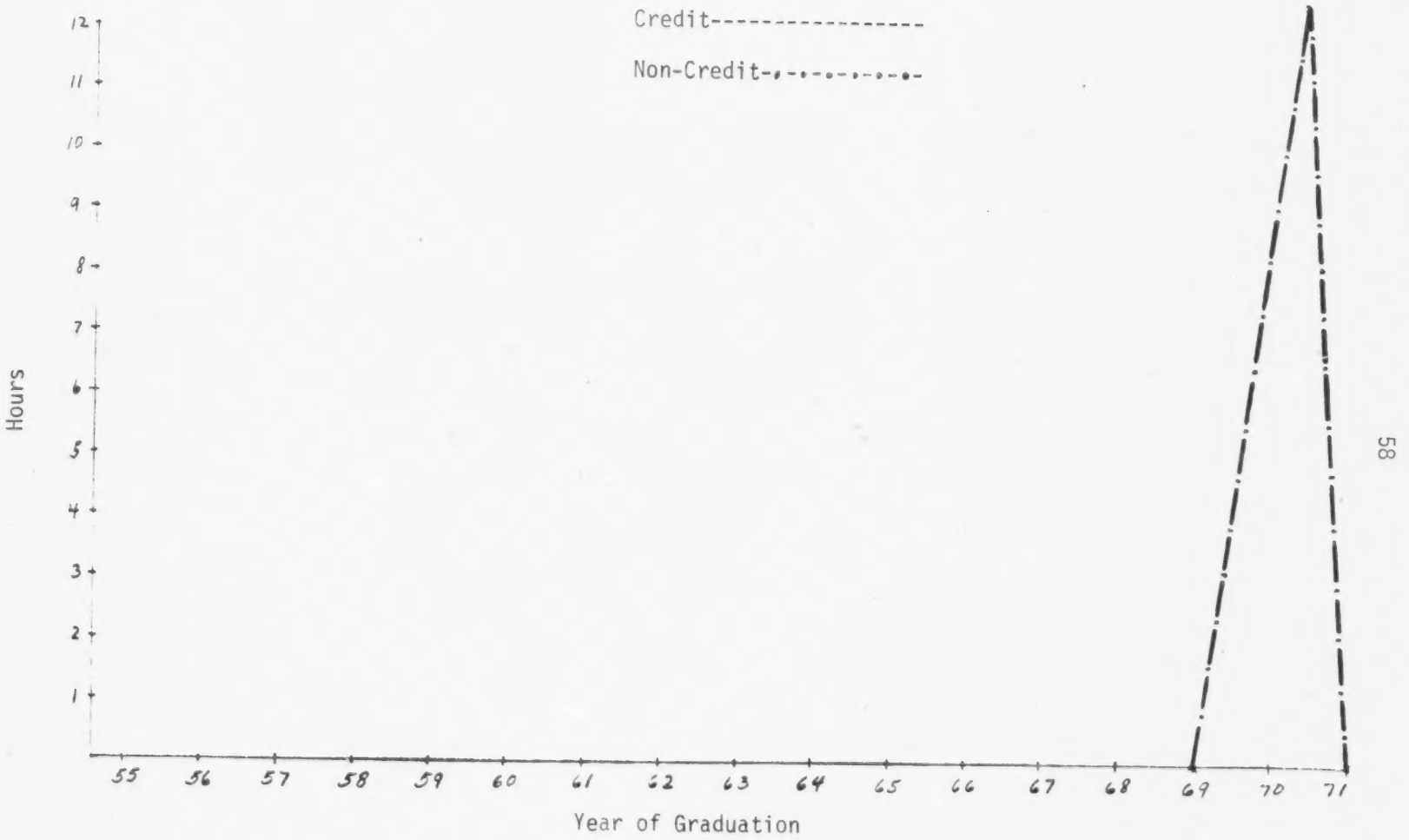


Figure 37

Continuing Education Courses: Forestry Technology Graduates
Category: Directly Related

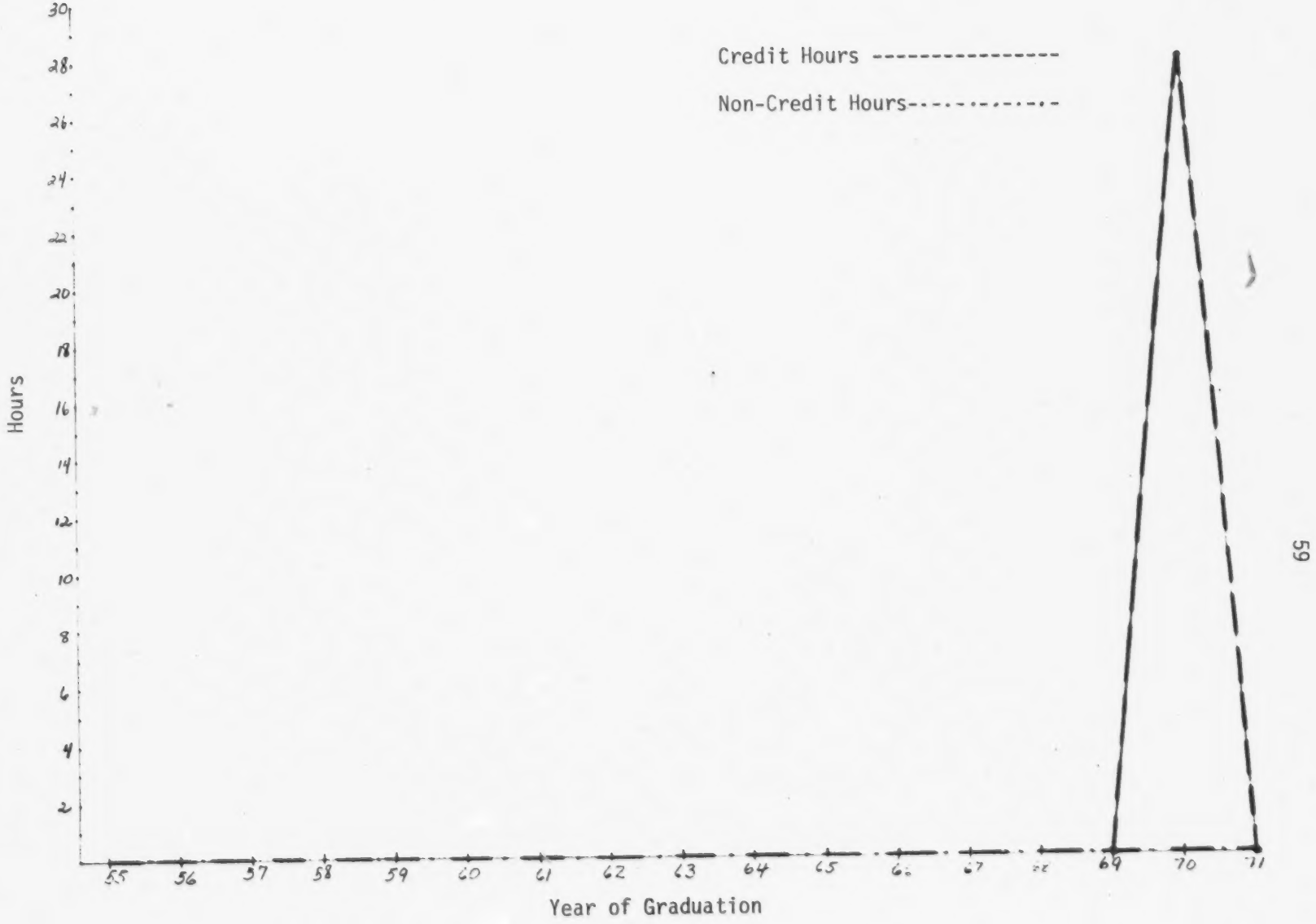


Figure 38

Continuing Education Courses: Forestry Technology Graduates
Category: Directly Related

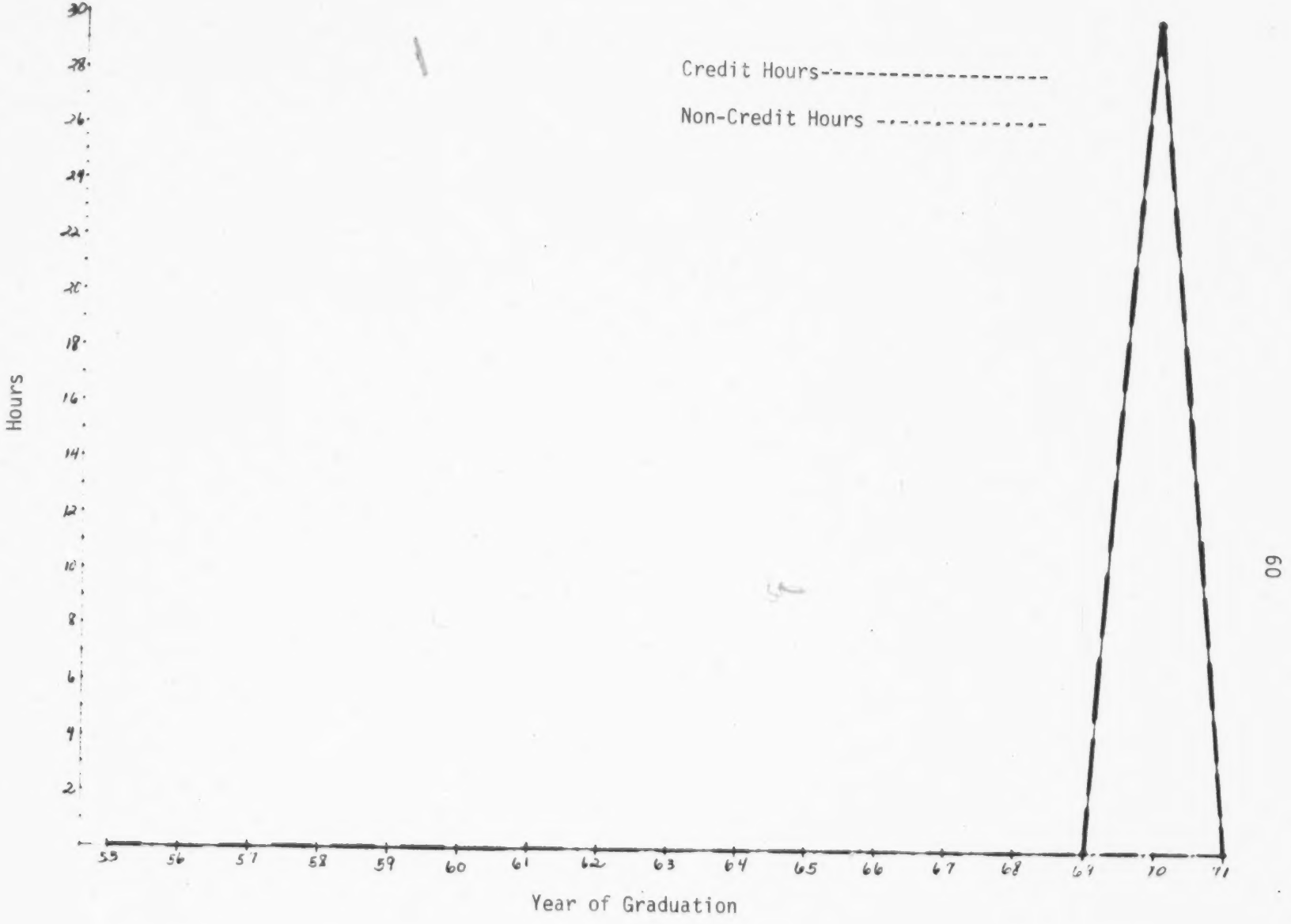


Figure 39

EET GRADUATES: 1955

Total Hours _____

Credit Hours - - - - - - - - -

Non-Credit Hours - · - · - · - · -

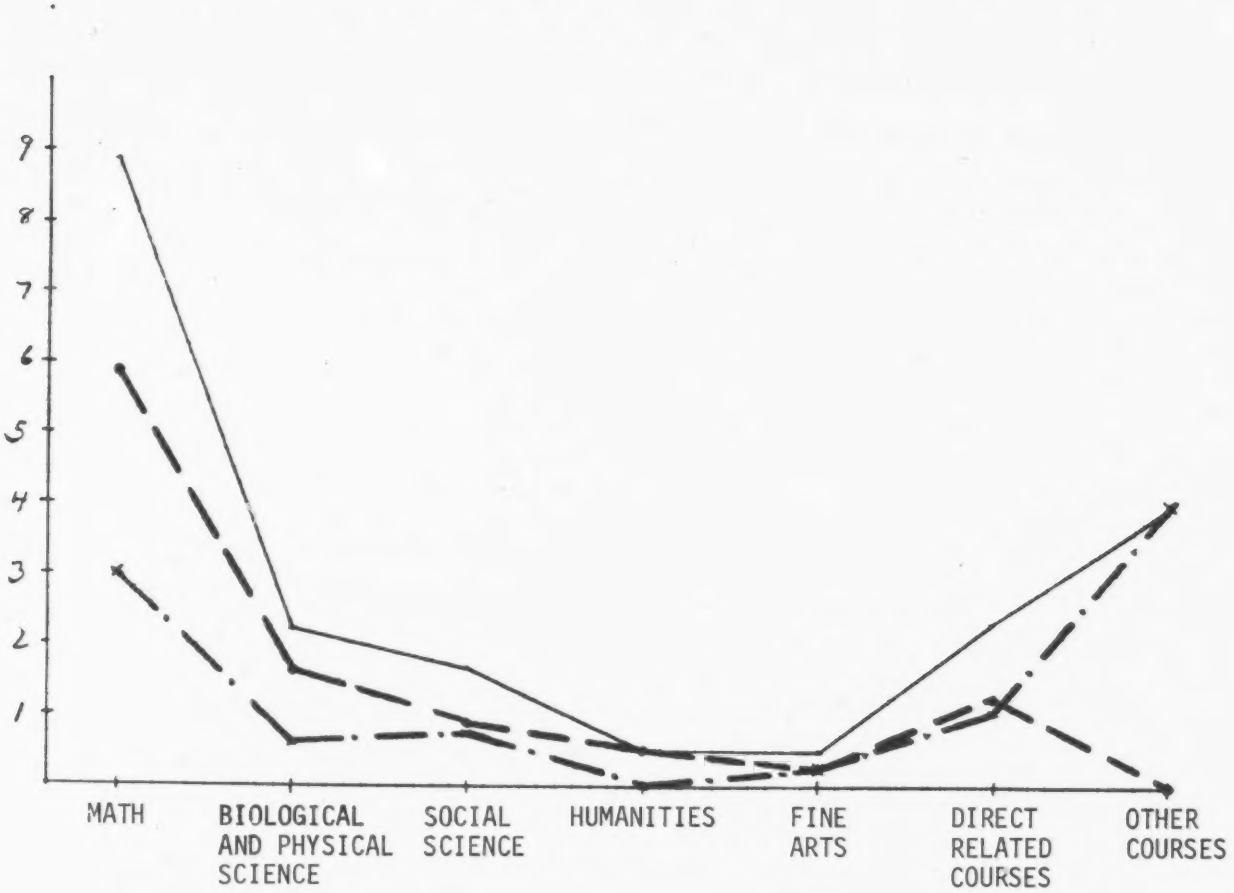


Figure 40

1956 (Figure 41), 1957 (Figure 42), 1961 (Figure 46), 1962 (Figure 47), 1966 (Figure 51), 1969 (Figure 54), 1970 (Figure 55), and 1971 (Figure 56) was found to be in mathematics. The course area "directly related to associate degree program" received the greatest amount of attention (as expressed in mean credit hours) for five of the classes, they were: 1958 (Figure 43), 1959 (Figure 44), 1960 (Figure 45), 1967 (Figure 52), and 1968 (Figure 53) while the major category for the class of 1963 (Figure 48) was social sciences. Two classes, 1964 (Figure 49), and 1965 (Figure 50), displayed their highest overall means in the "other" course category.

Also of interest is the "U" characteristic of the overall profile for four earliest and the last class, which indicates a concentration in the categories of "math" and "other" course categories. The shape is lost for many of the other classes because of the higher means for social sciences. The class of 1963 stands out in this regard, as well as displaying the highest mean for total continuing education courses among the 17 graduation groups. As expected, the last four classes have low means for all course categories, probably because of the relatively short time lapse since earning their associate degrees.

VI. Continuing Education Profiles for the DDT Graduation Groups

The continuing education profile for each of the 17 DDT graduation groups are displayed in Figures 57 through 73.

Ten of the seventeen graduation classes had highest mean continuing education activities in the math category. The next largest, with three graduation groups within it, was the "other" category. Social science was the chief selection for two classes, but in both cases the

EET 1956 CLASS

Total Hours _____

Credit Hours - - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

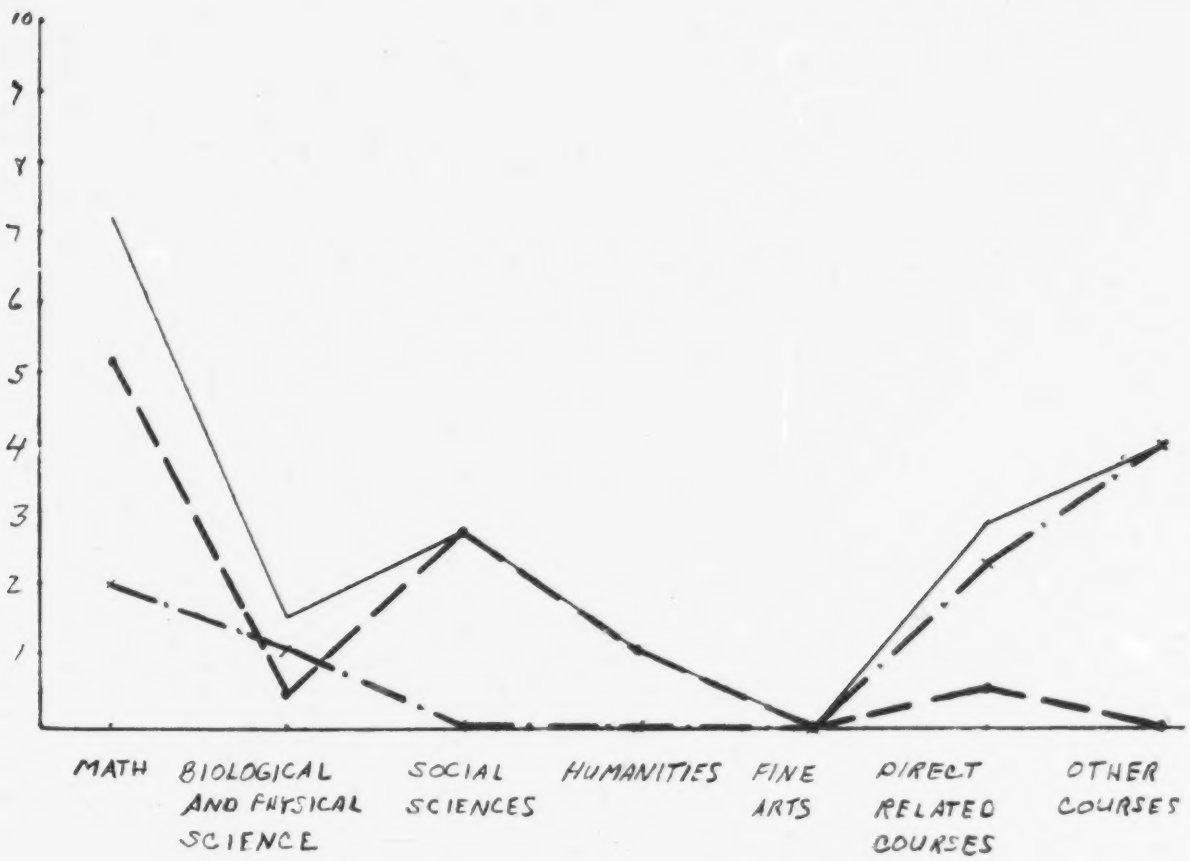


Figure 41

EET 1957 CLASS

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

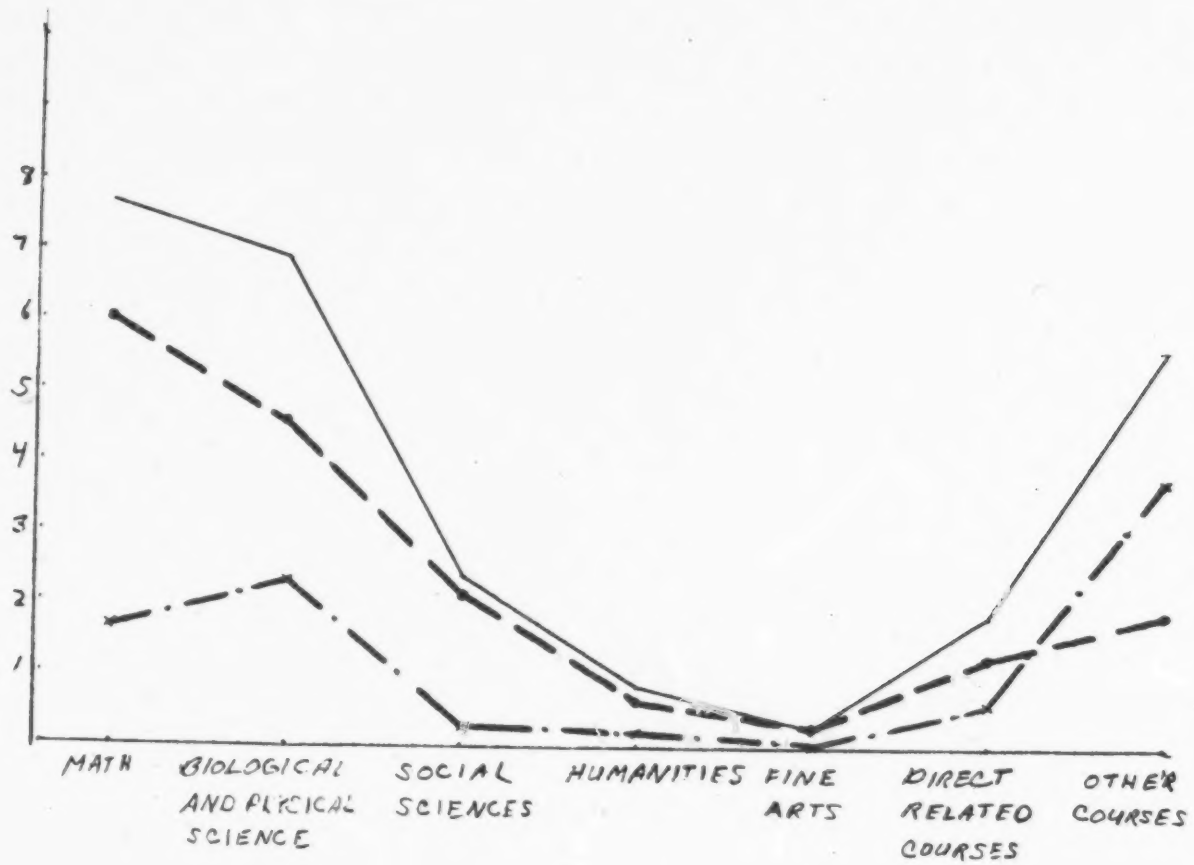


Figure 42

EET 1958 CLASS

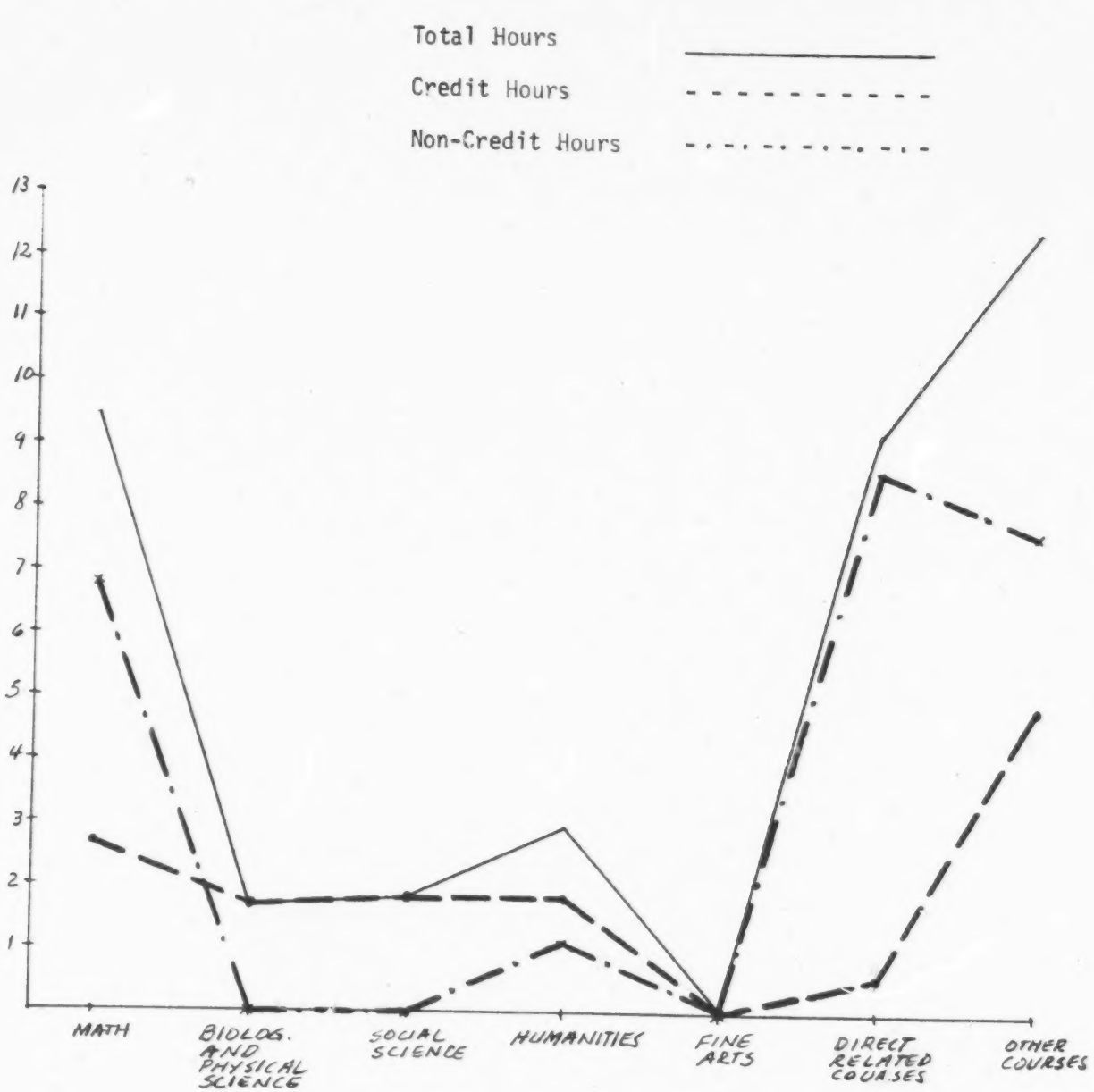


Figure 43

EET 1959 CLASS

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - .

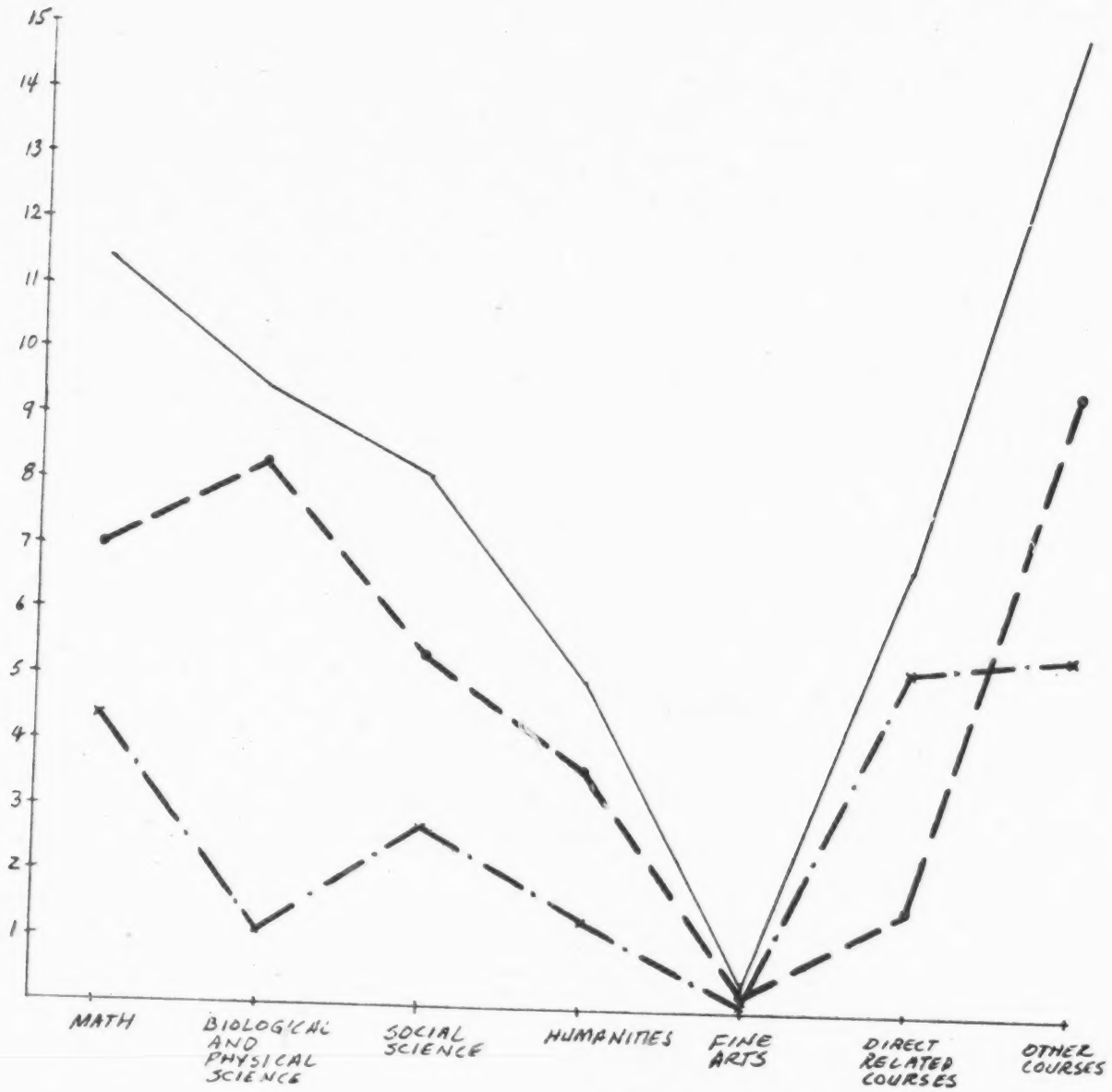


Figure 44

EET 1960 CLASS

Total Hours _____

Credit Hours - - - - - - - - - - - - -

Non-Credit Hours - . - . - . - . - .

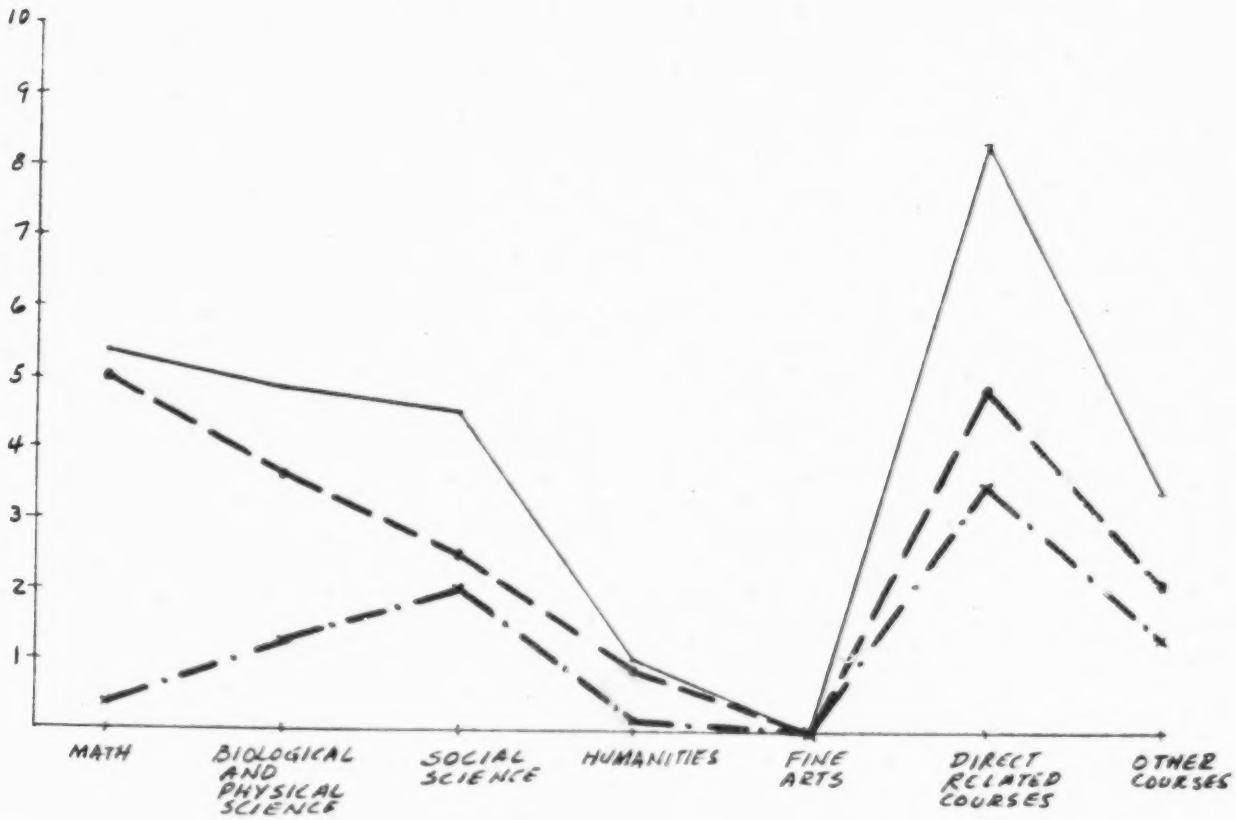


Figure 45

EET 1961 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

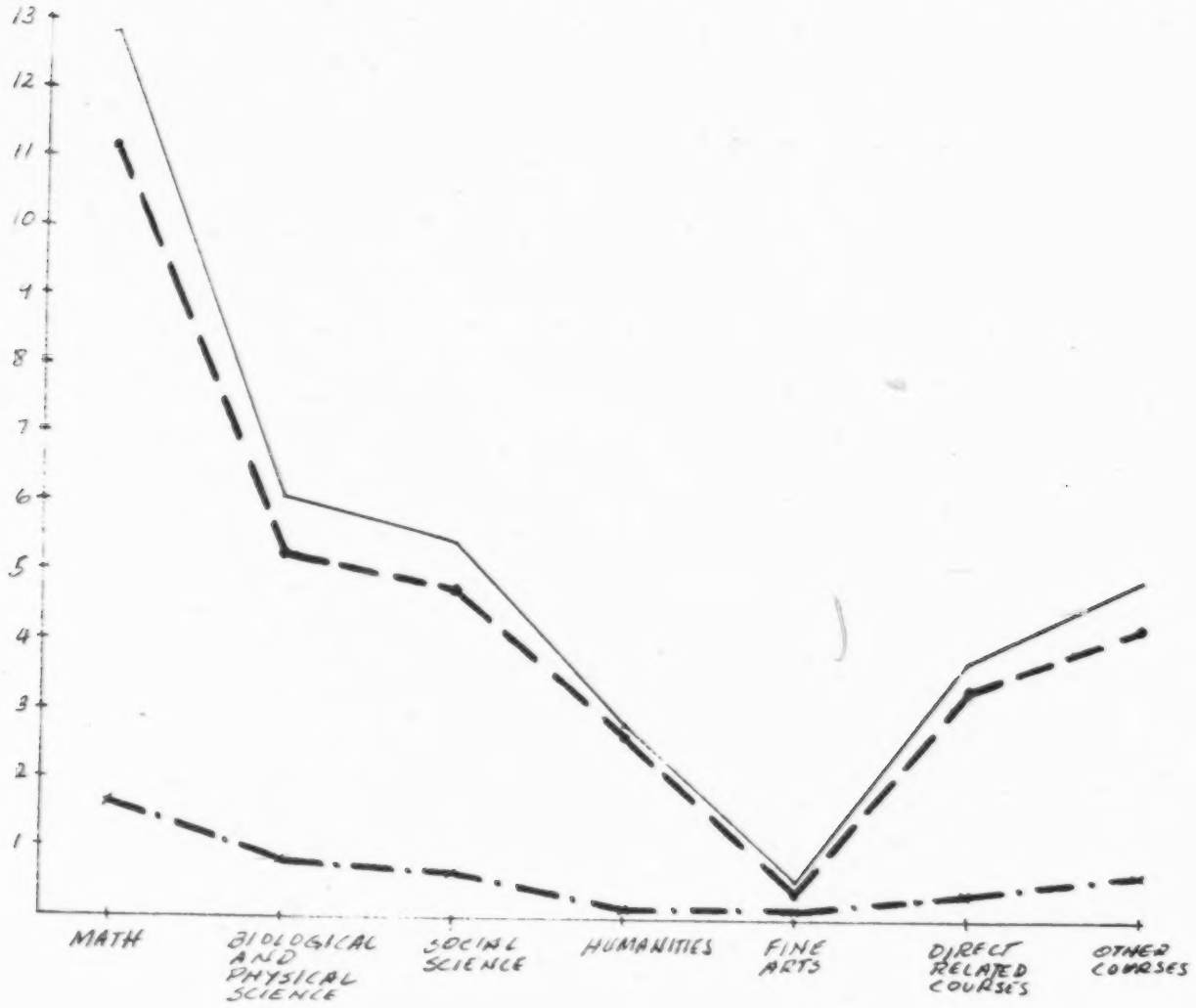


Figure 46

EET 1962 CLASS

Total Hours _____

Credit Hours - - - - - - - - -

Non-Credit Hours - . - . - . - . -

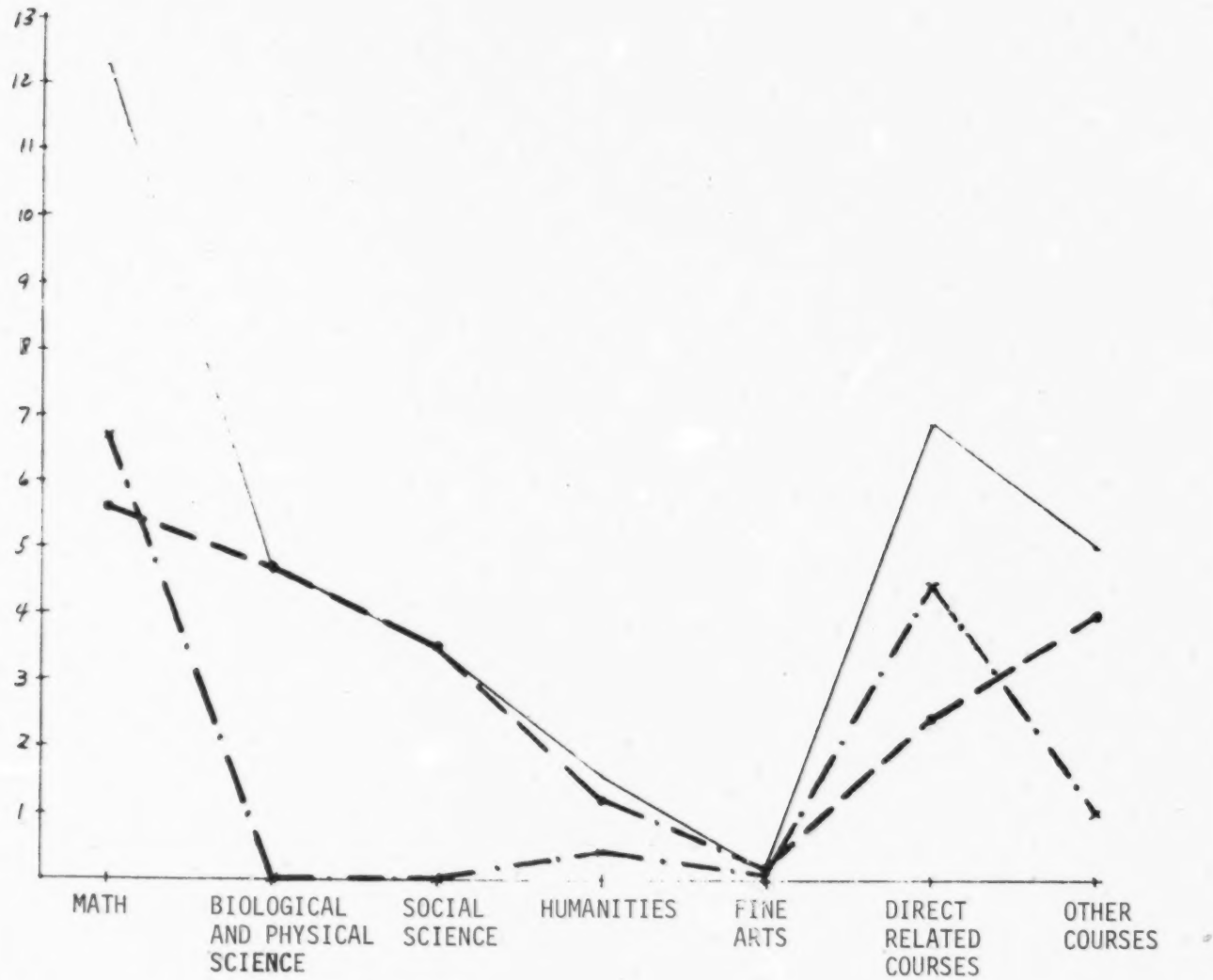


Figure 47

EET 1963 CLASS

Total Hours _____

Credit Hours - - - - - - - - -

Non Credit Hours - . - . - . - . -

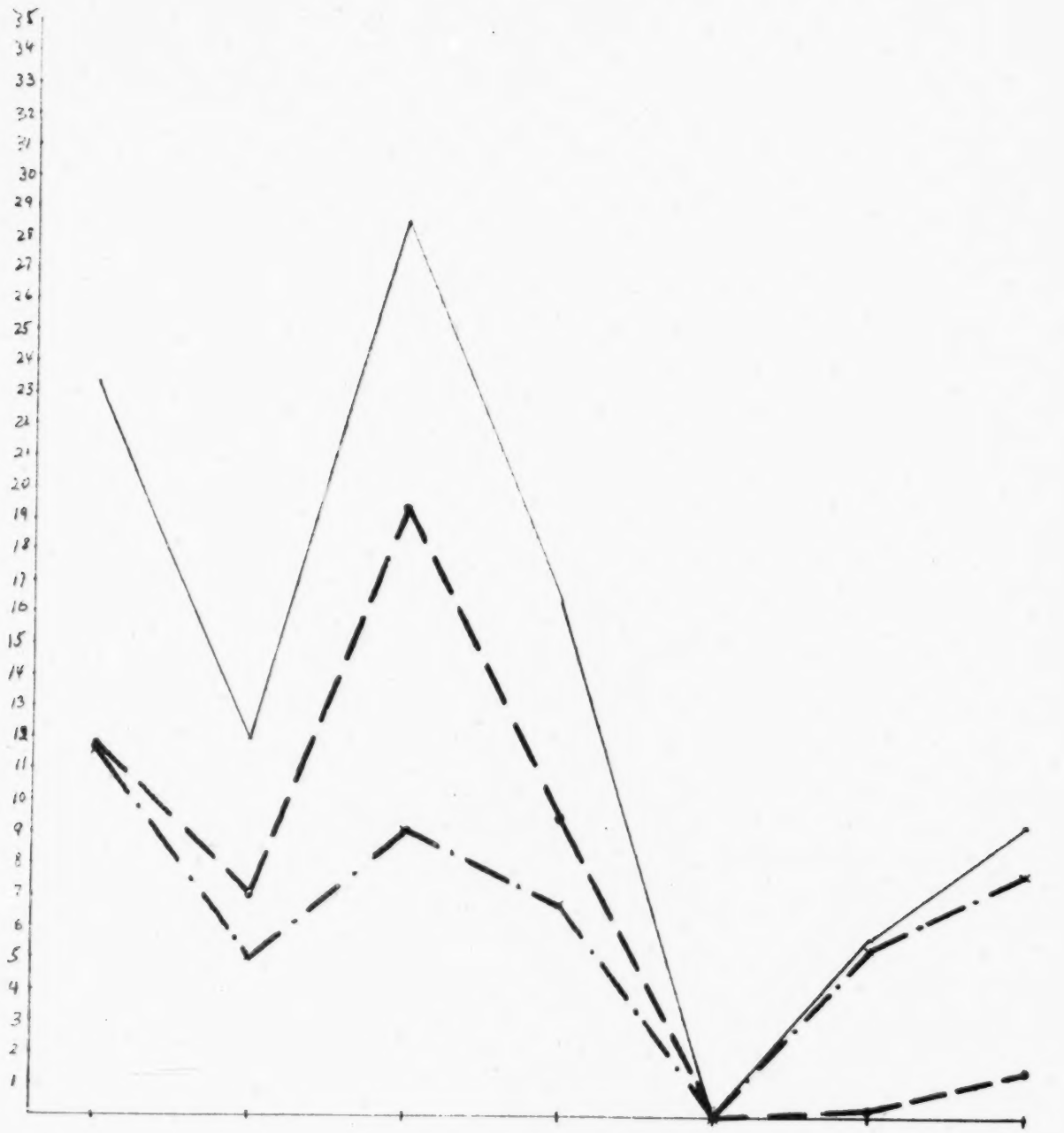


Figure 48

EET 1964 CLASS

Total Hours ————————

Credit Hours - - - - - - - -

Non-Credit Hours - . - . - . -

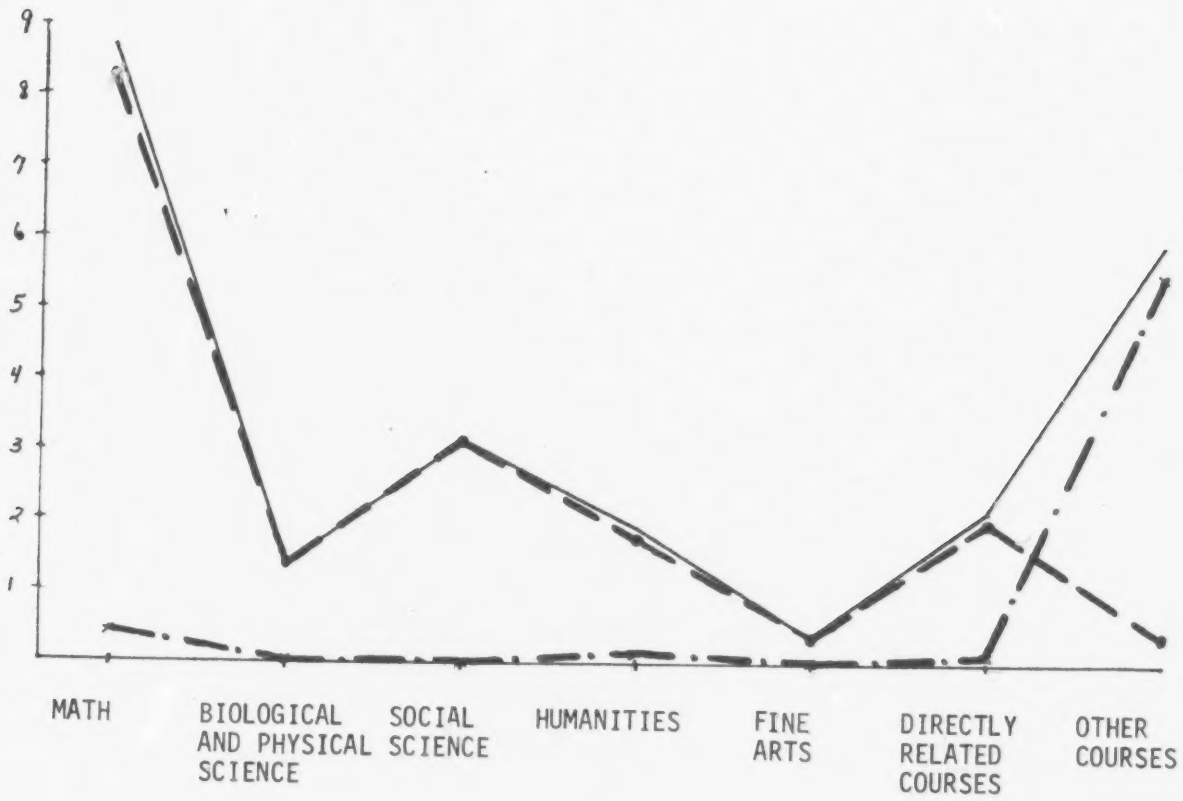


Figure 49

EET 1965 CLASS

Total Hours _____

Credit Hours - - - - - - - - -

Non Credit Hours - . - . -

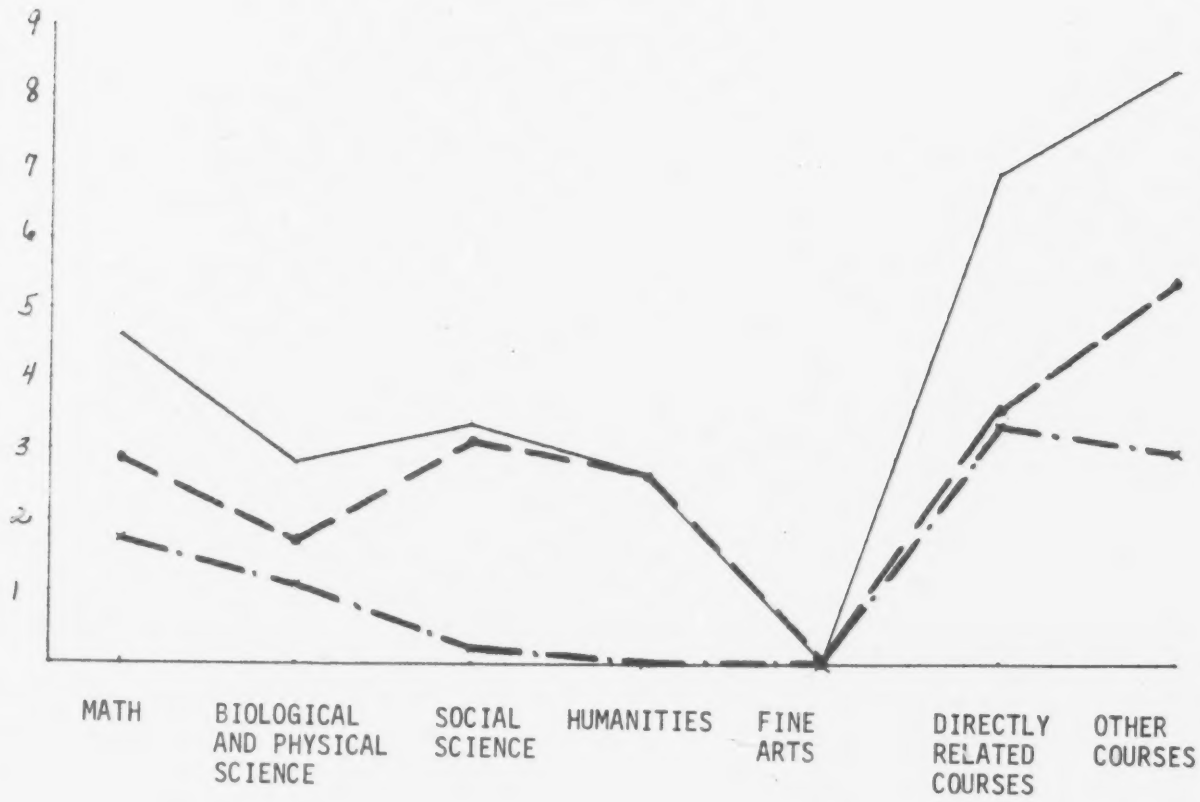


Figure 50

EET 1966 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

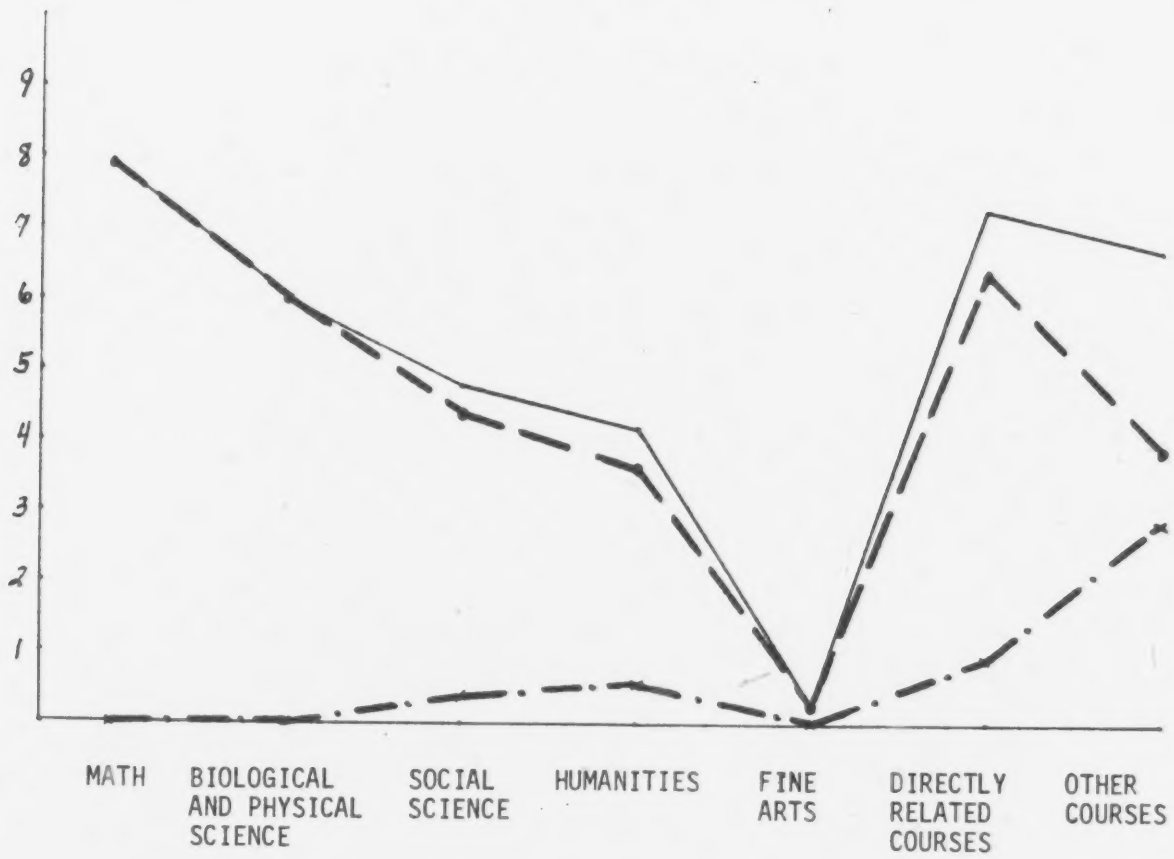


Figure 51

EE] 1967 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

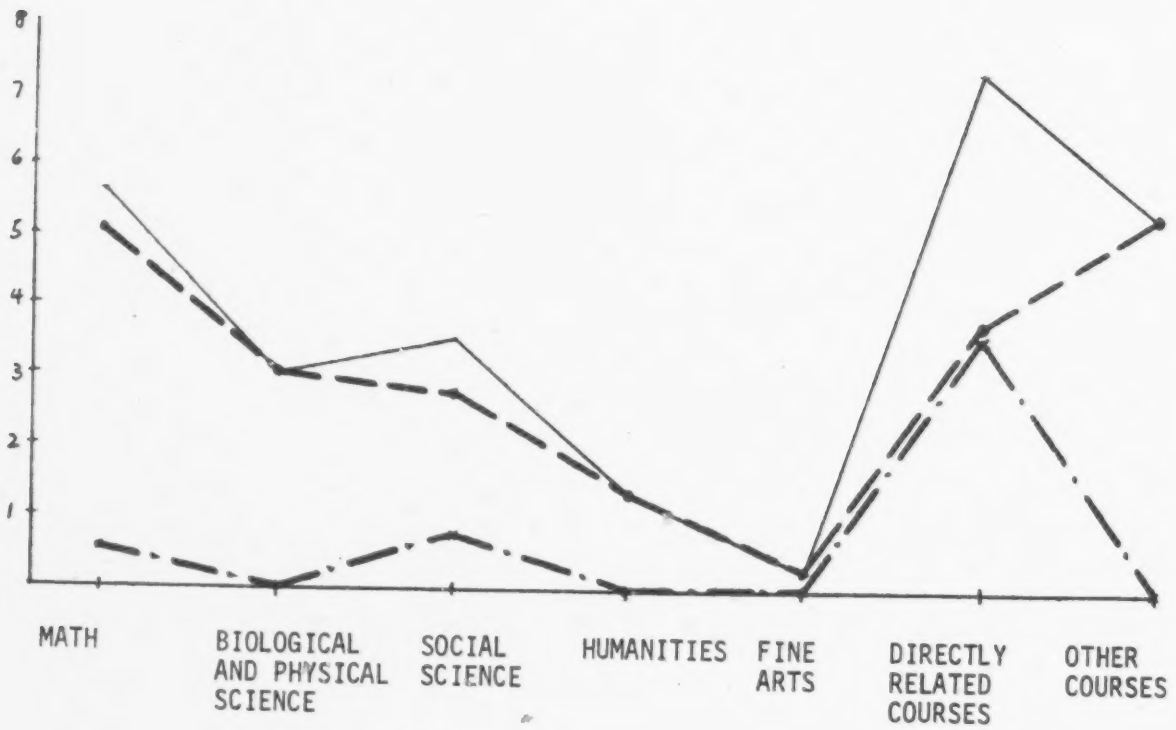


Figure 52

EET 1268 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

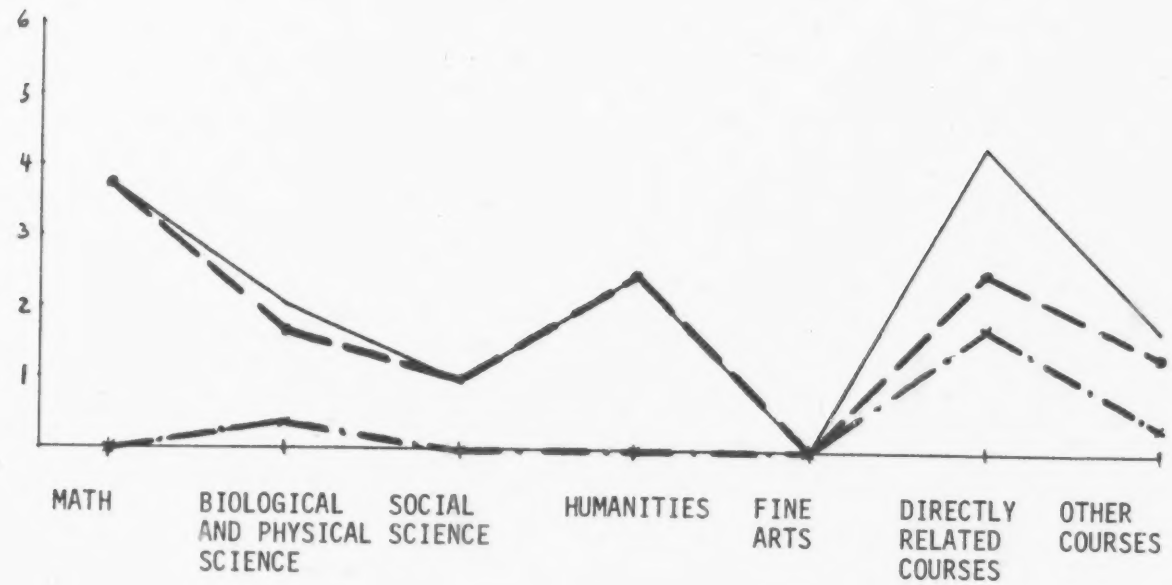


Figure 53

EET 1969 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

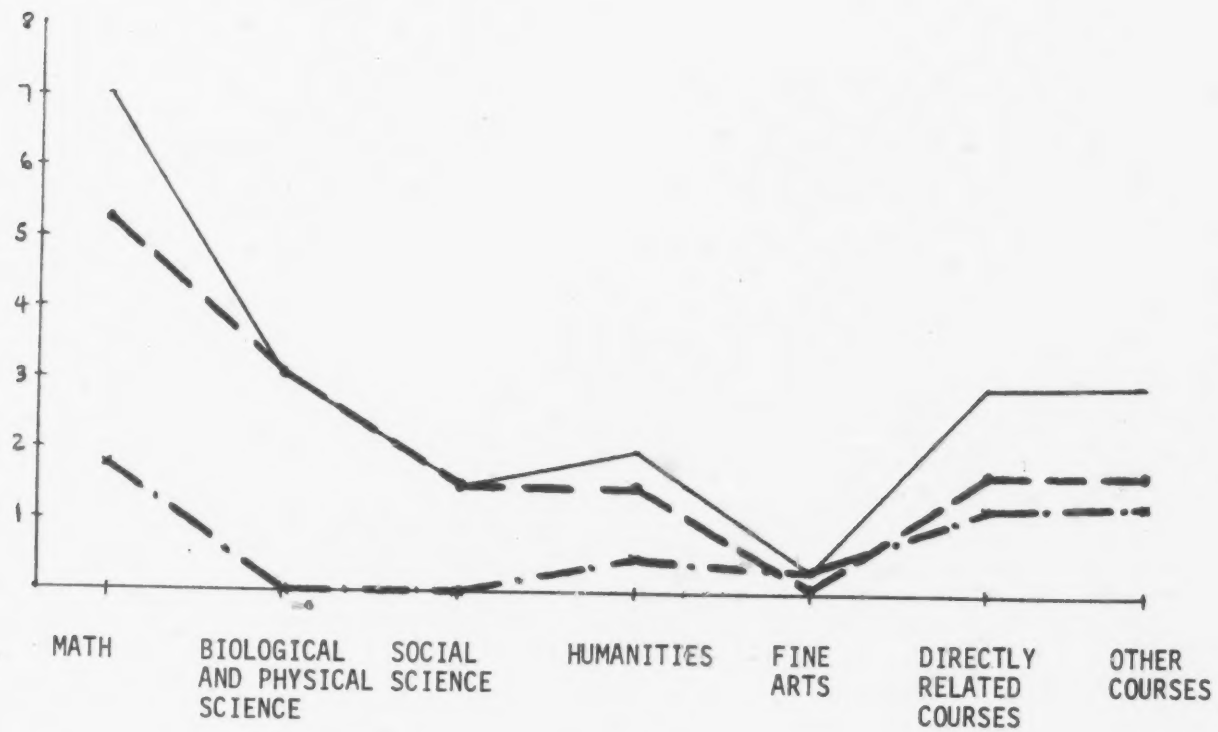


Figure 54

EET 1970 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non Credit Hours - . - . - . -

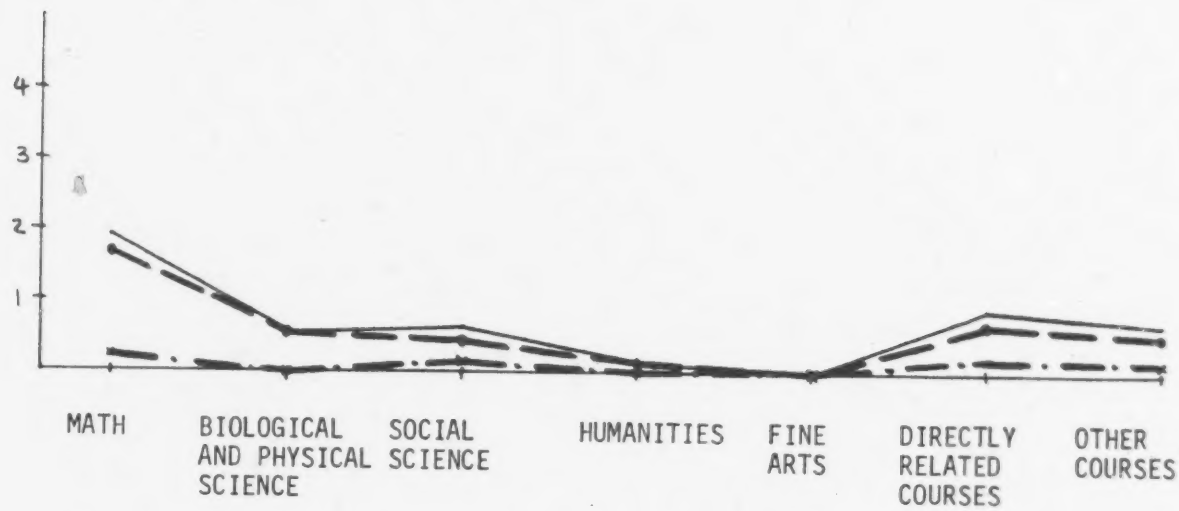


Figure 55

EET 1971 CLASS

Total Hours _____

Credit Hours - - - - - - - -

Non-Credit Hours - . - . - . -

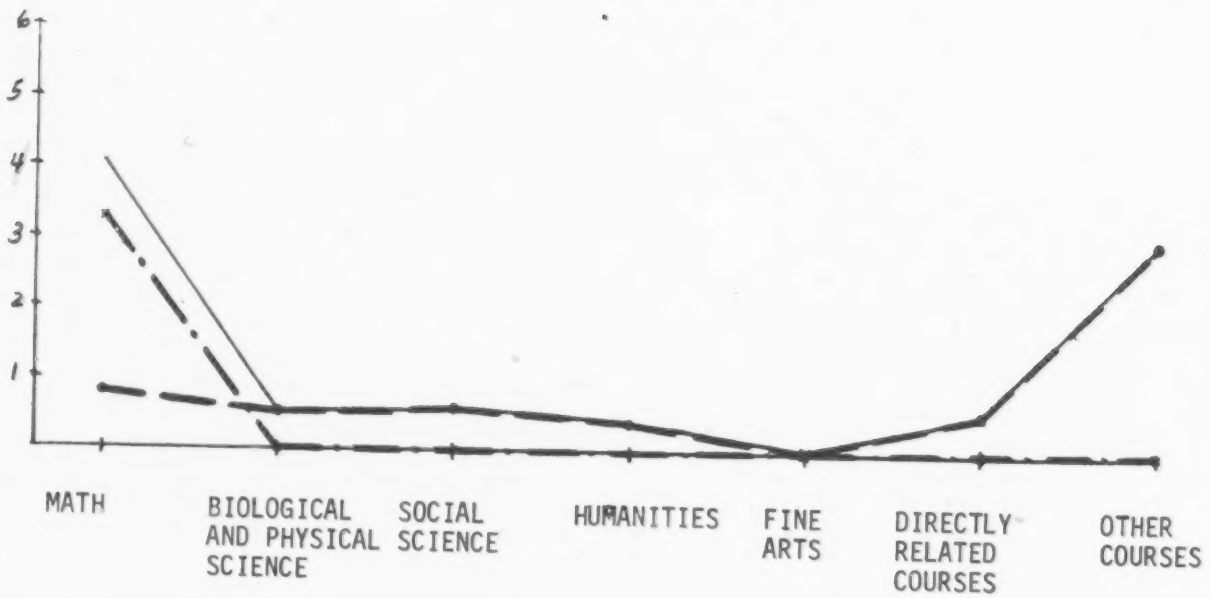


Figure 56

DDT Graduates: 1955

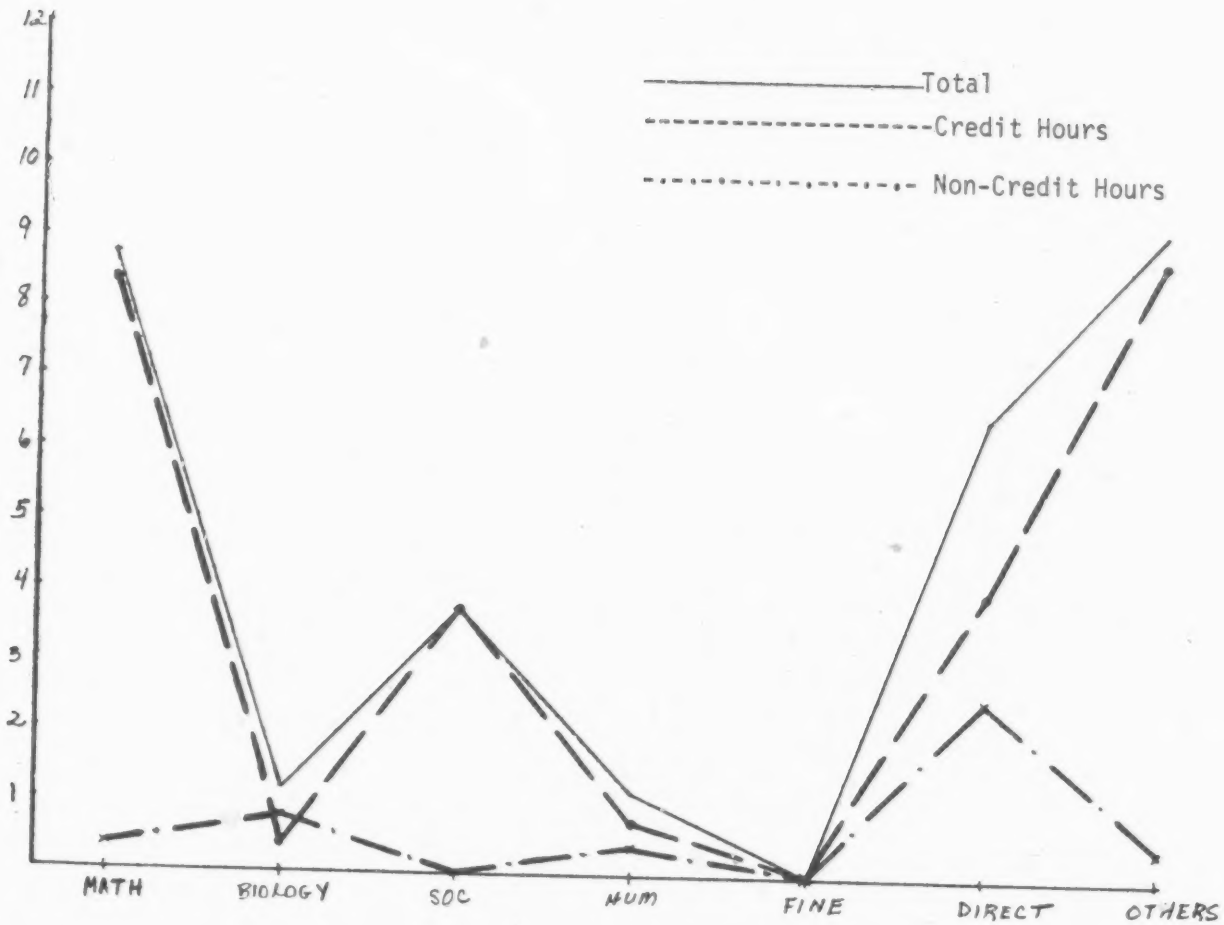


Figure 57

DDT 1956 CLASS

Total Hours _____

Credit Hours - - - - - - - - - -

Non Credit Hours . . . . . .

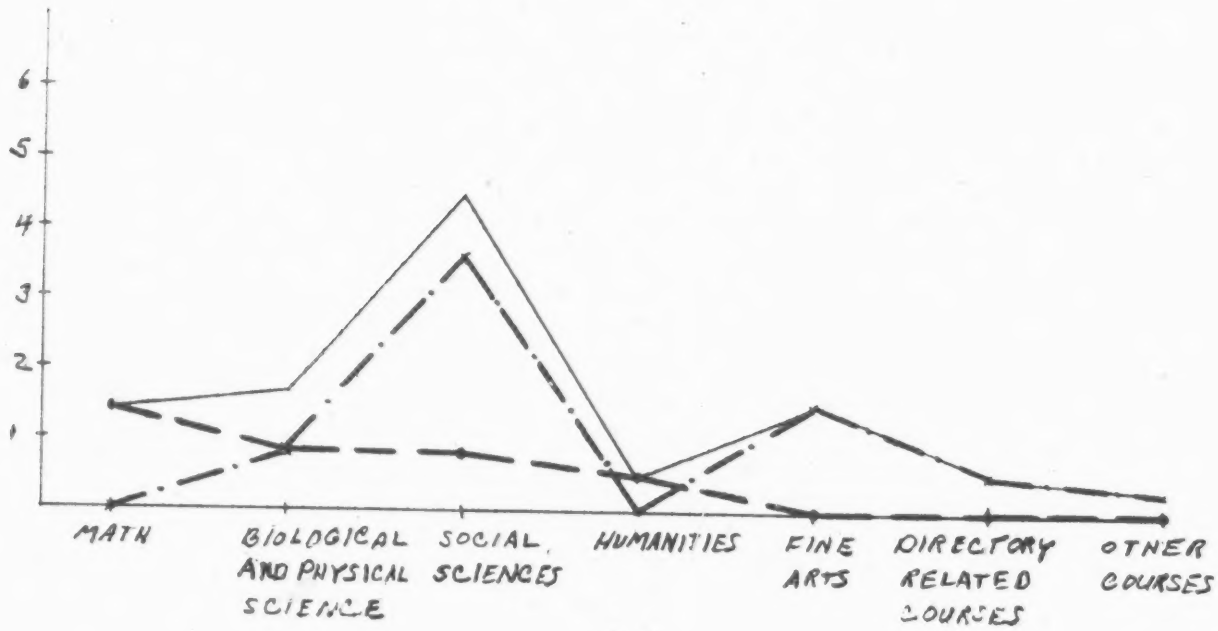


Figure 58

DDT 1957 CLASS

Total Hours _____

Credit Hours - - - - - - - - - -

Non Credit Hours - . - . - . - .

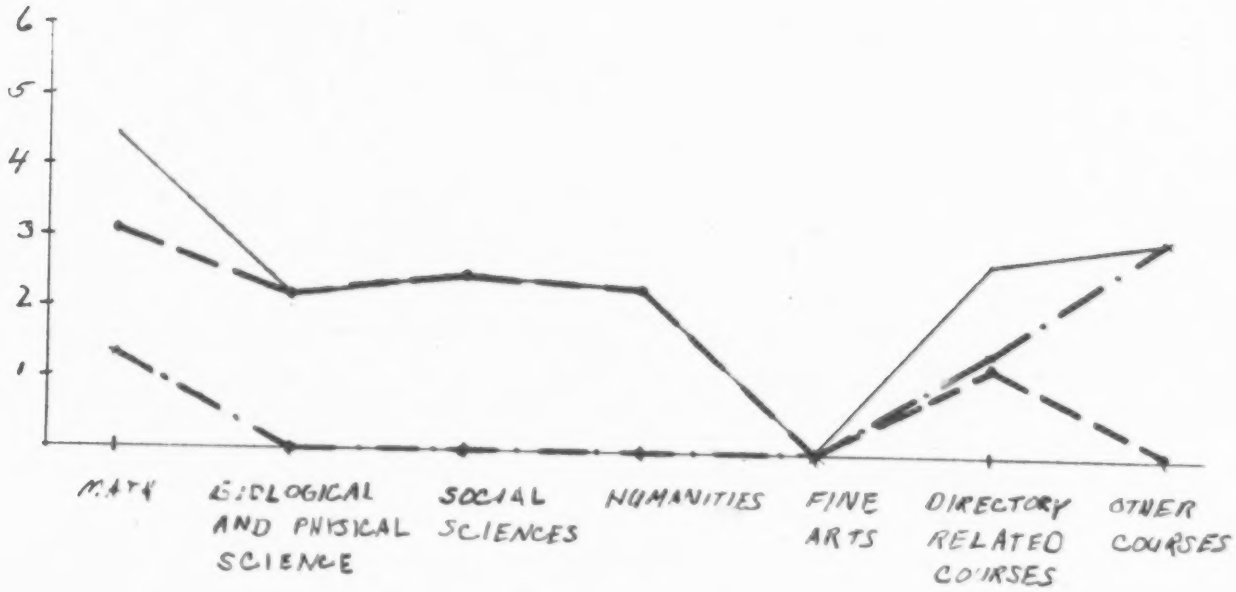


Figure 59

DDT Graduates: 1958

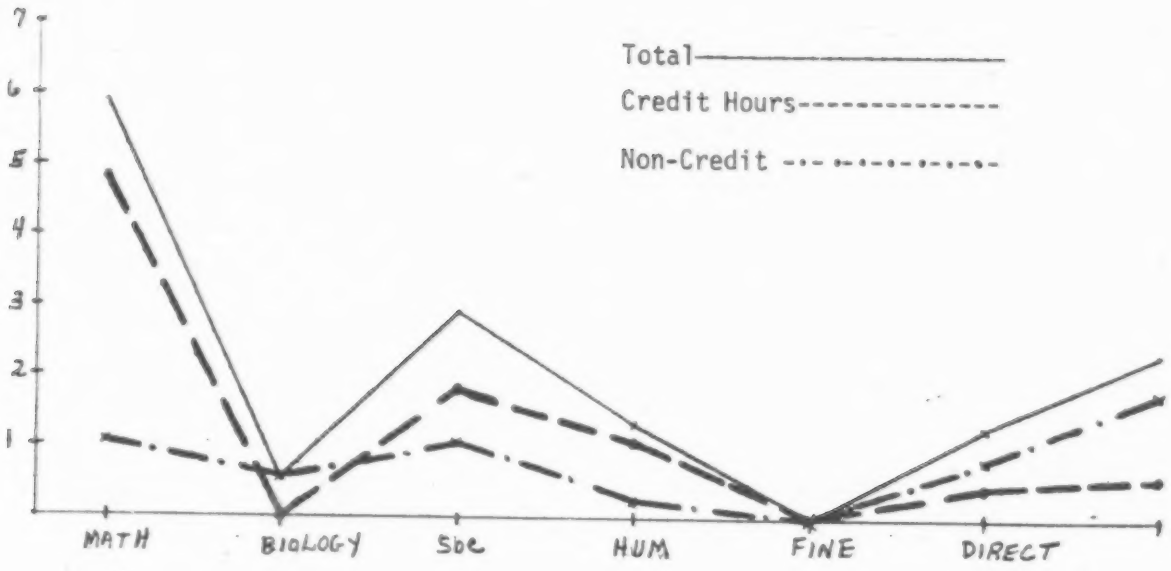


Figure 60

DDT Graduates: 1959

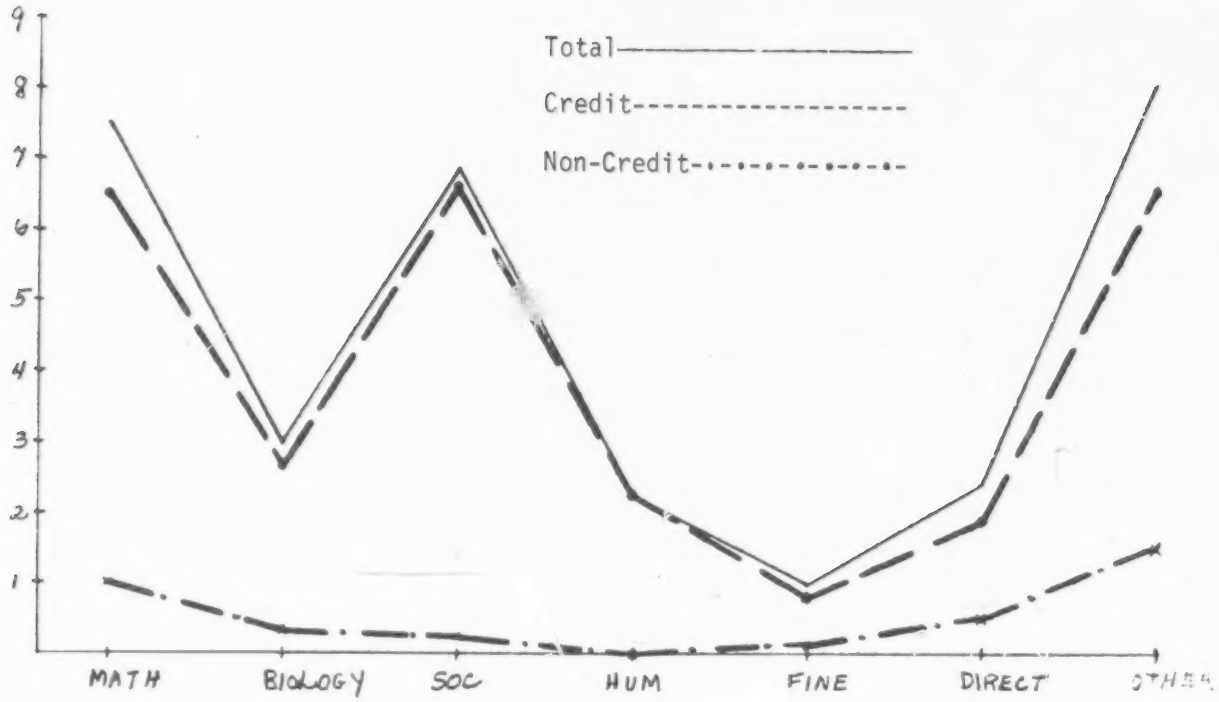


Figure 61

DDT Graduates: 1960

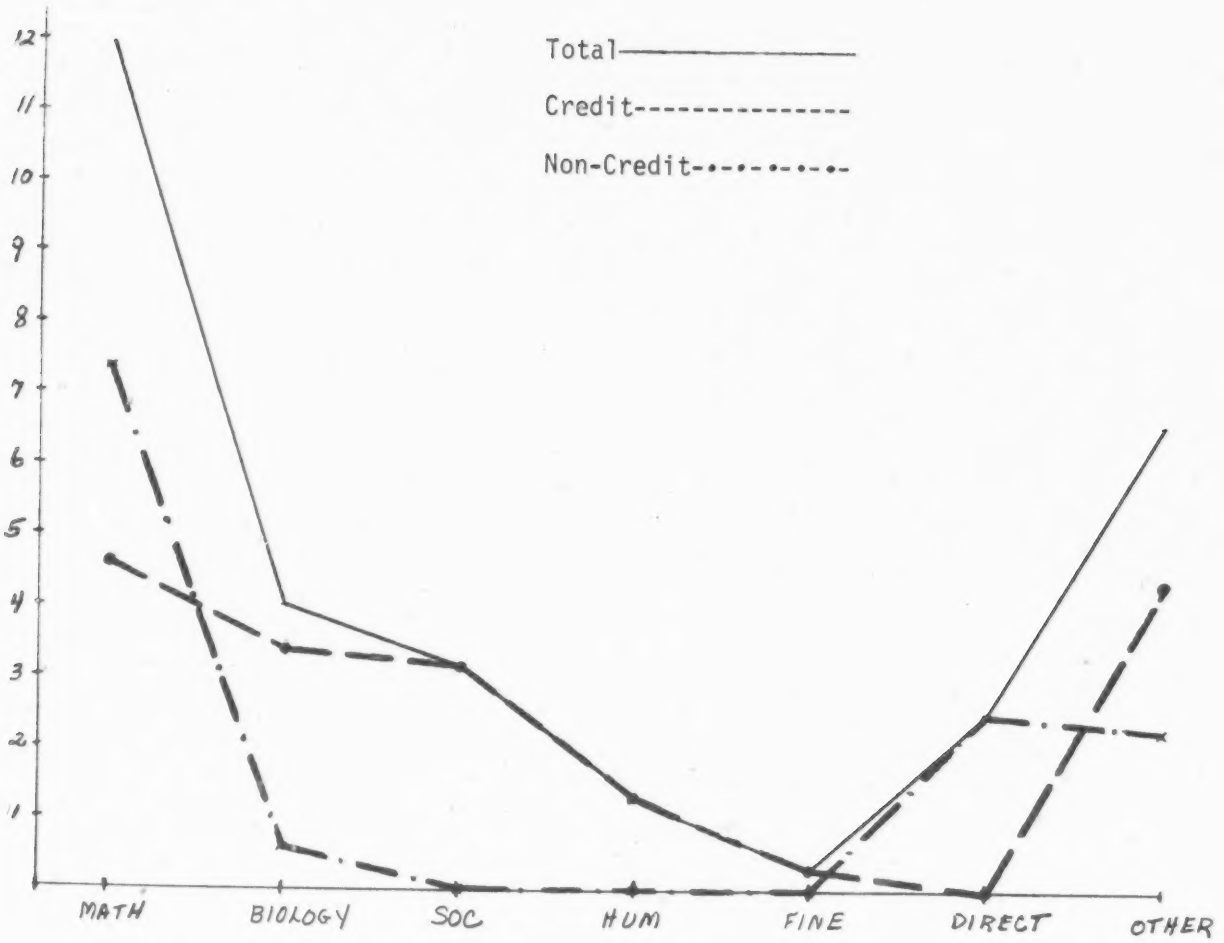


Figure 62

DDT Graduates: 1961

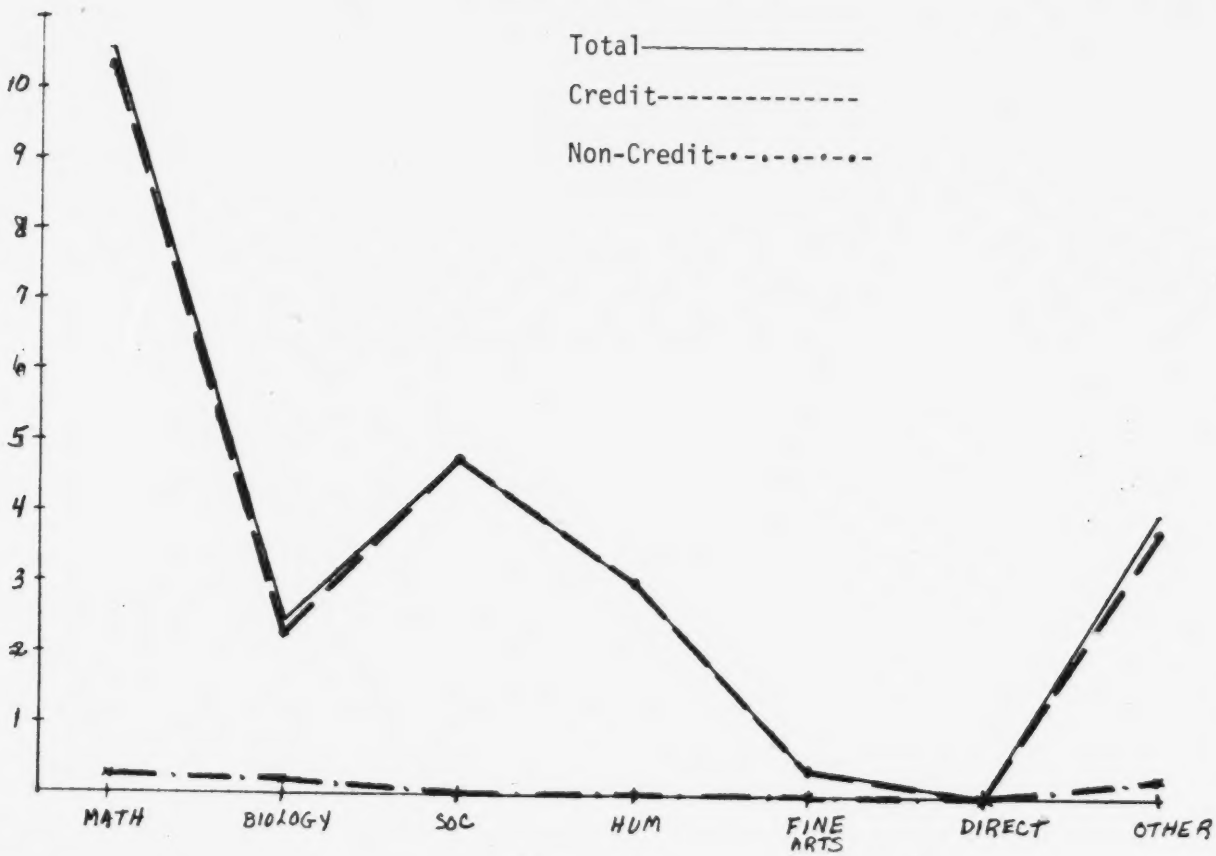


Figure 63

DDT 1962 CLASS

Total Hours _____

Credit Hours - - - - - - - - - - -

Non Credit Hours - . - . - . - . - .

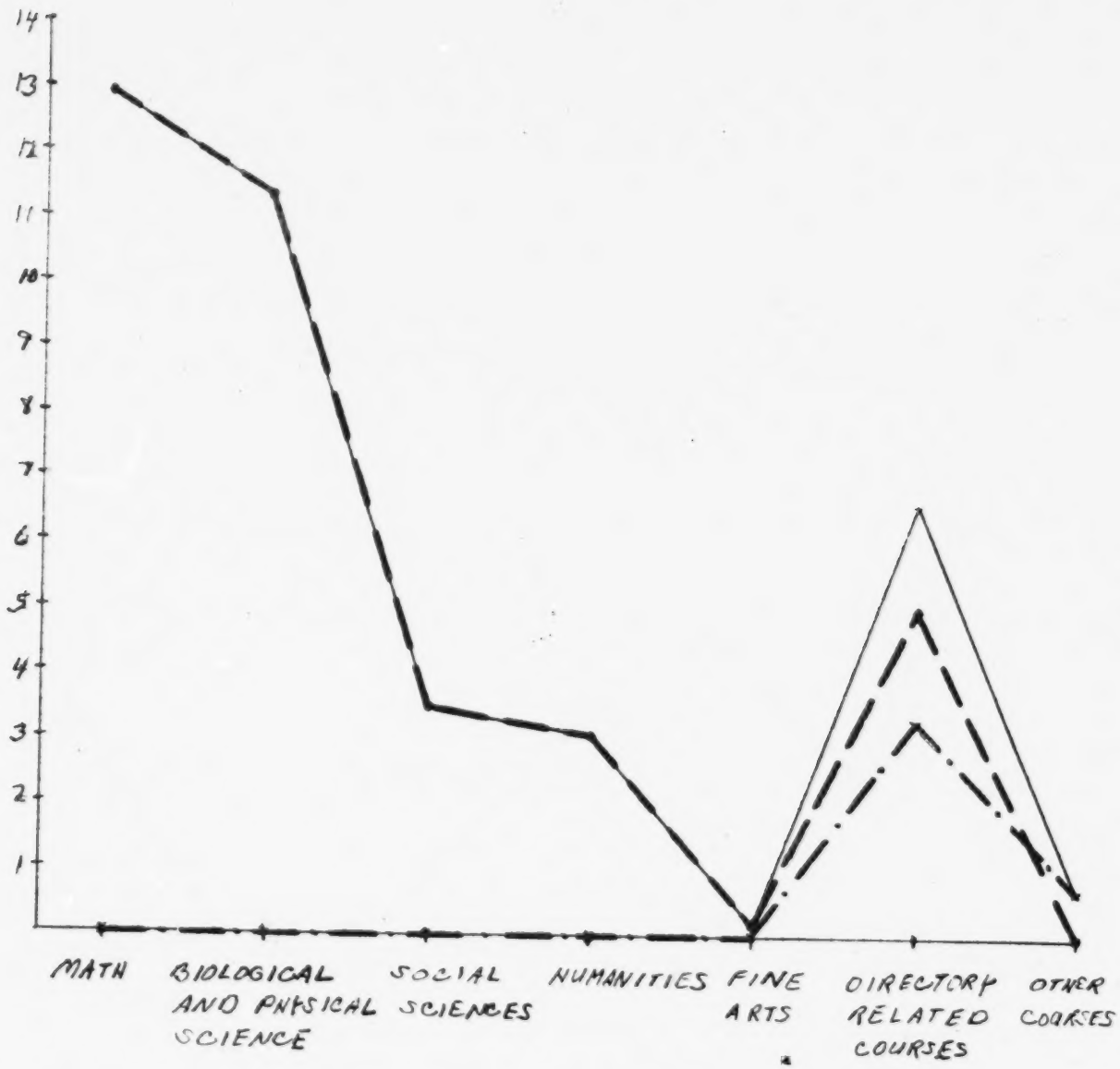


Figure 64

DDT 1963 CLASS

Total Hours _____

Credit Hours - - - - - - - - - - - -

Non-Credit Hours - . - . - . - . - .

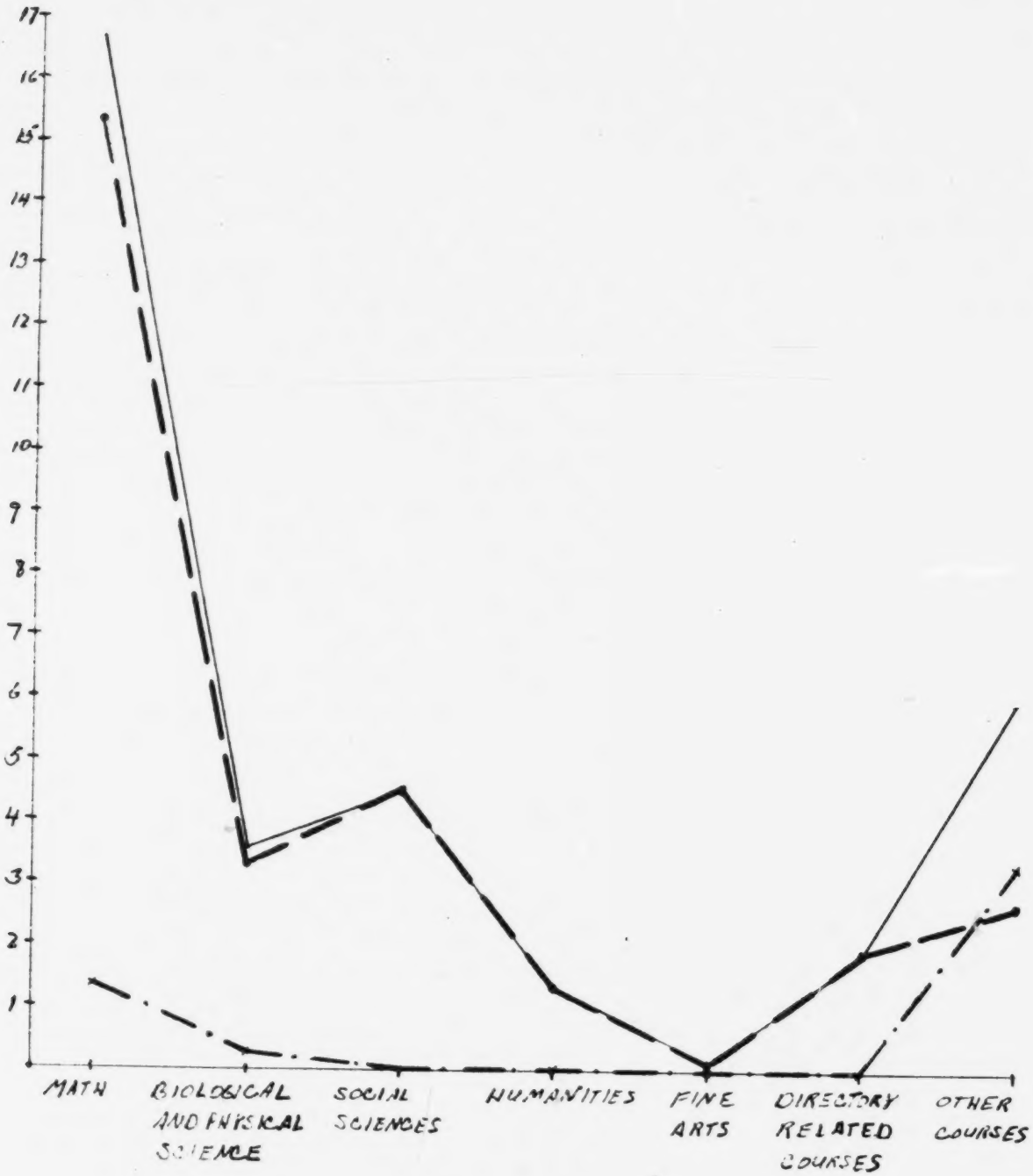


Figure 65

DDT 1964 CLASS

Total Hours _____

Credit Hours - - - - - - - - - - -

Non Credit Hours - . - . - . - . - .

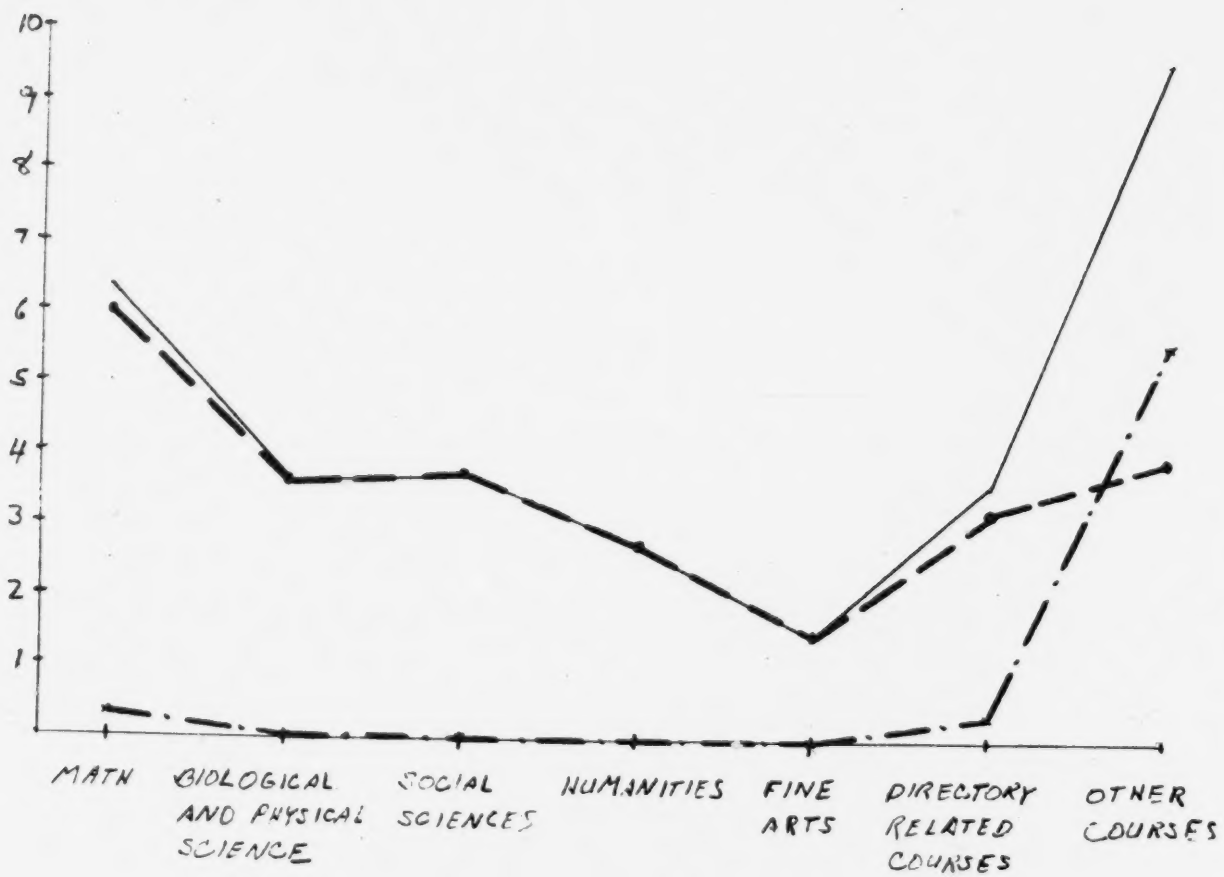


Figure 66

DDT 1965 CLASS

Total Hours ——————————

Credit Hours - - - - - - - - - - - - - - -

Non Credit Hours - . - . - . - . - . - . -

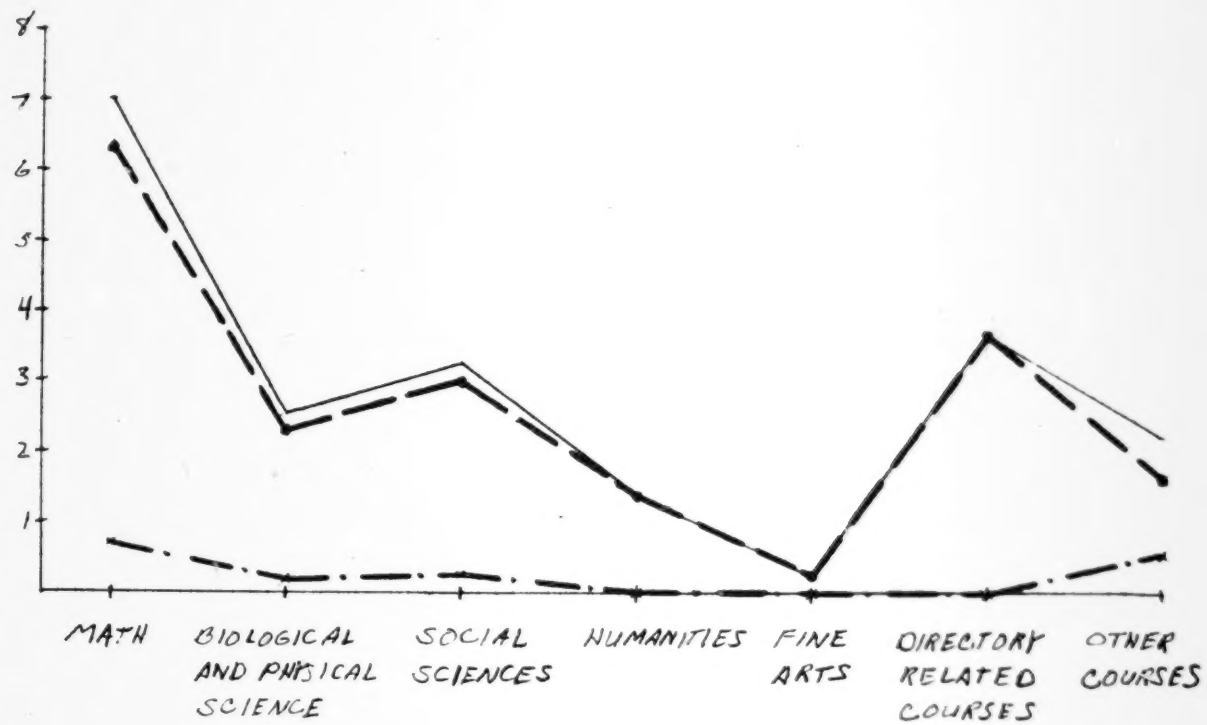


Figure 67

DDT Graduates: 1966

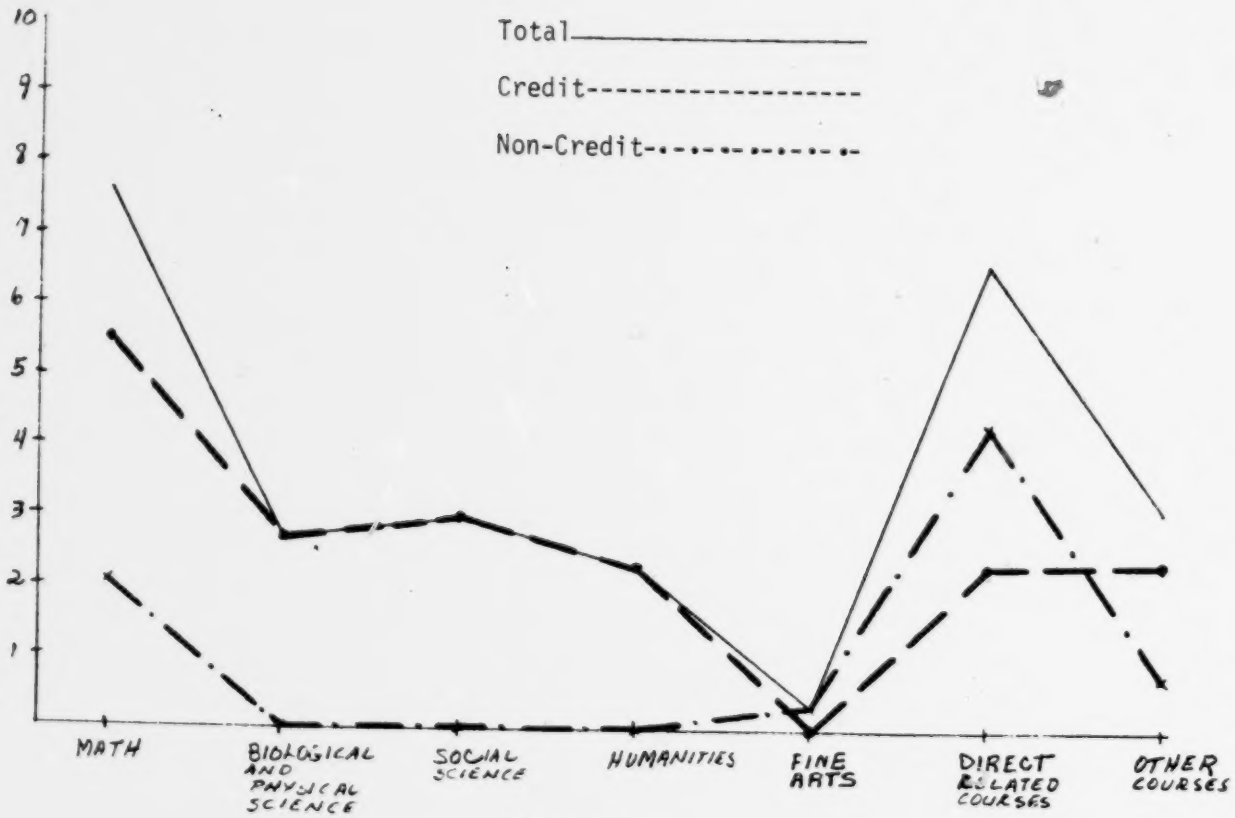


Figure 68

DDT Graduates: 1967

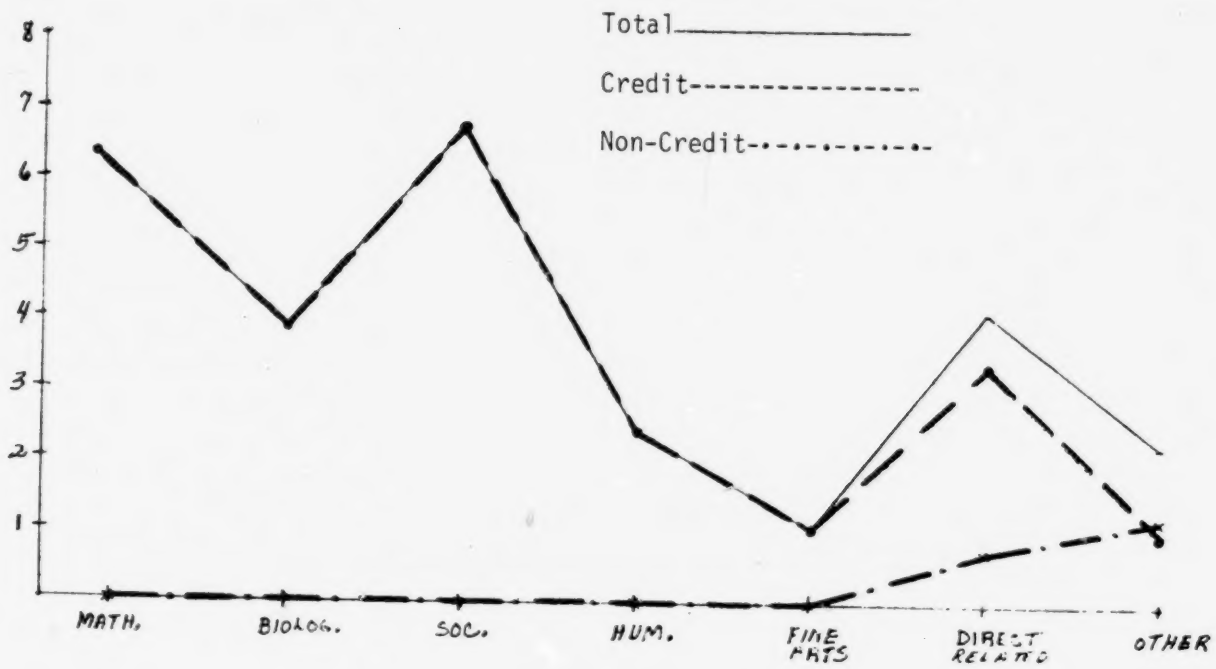


Figure 69

DDT Graduates: 1968

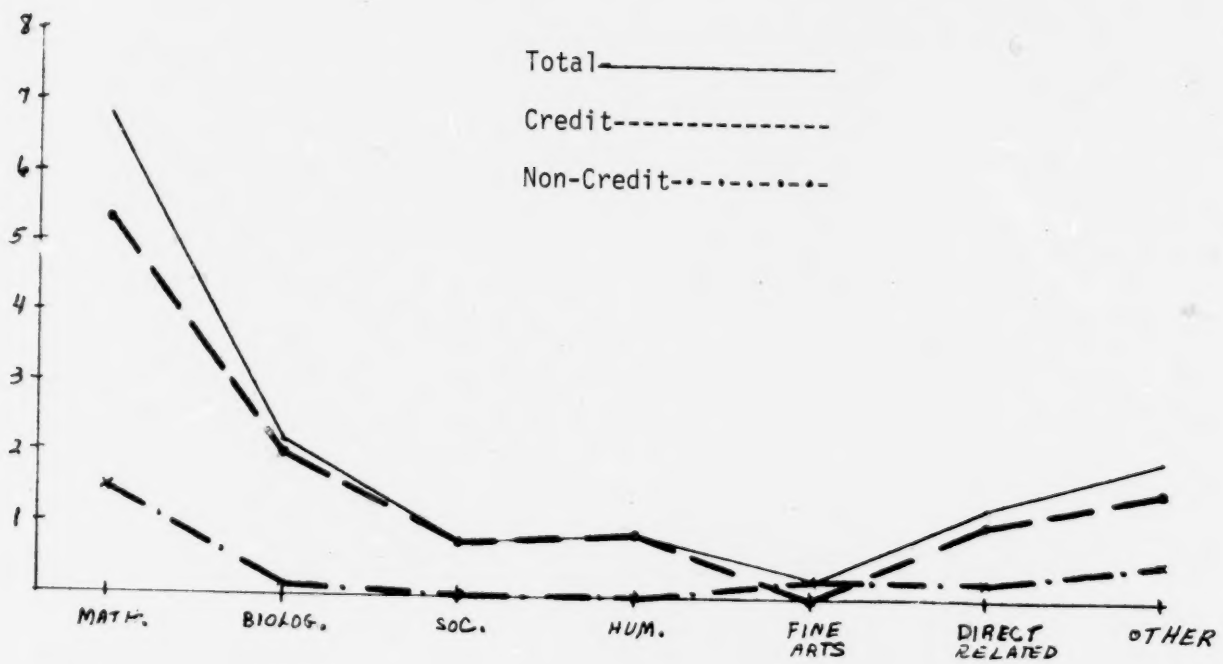


Figure 70

DDT Graduates: 1969

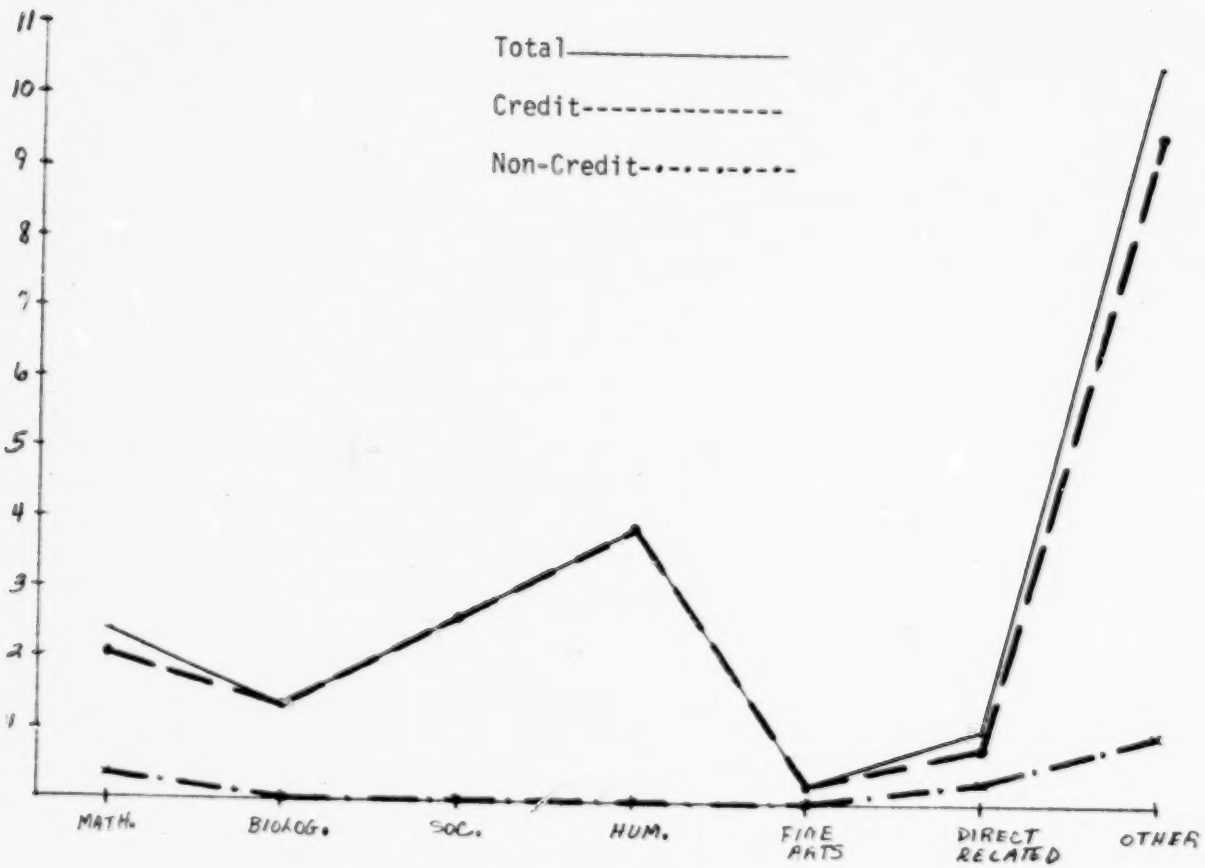


Figure 71

DDT Graduates: 1970

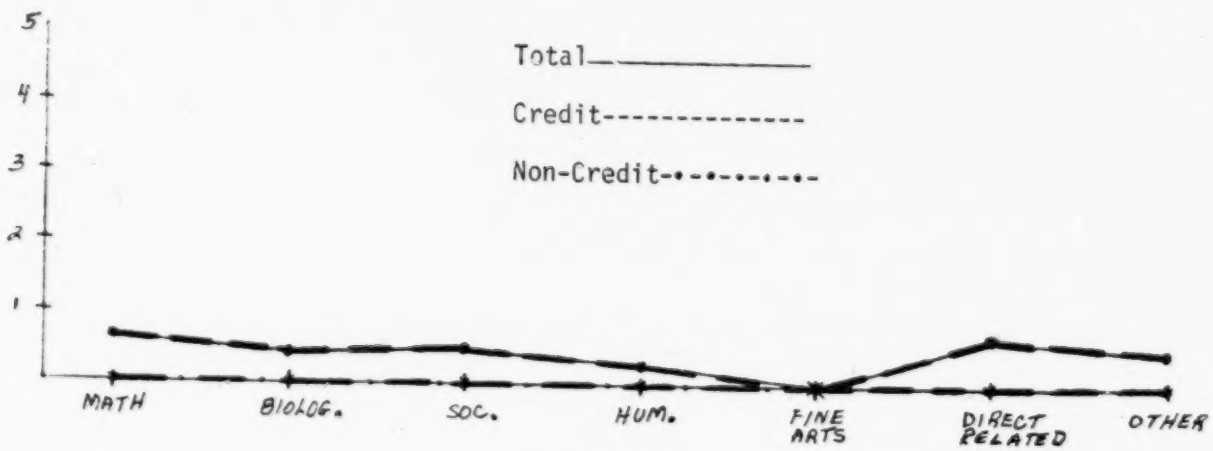


Figure 72

DDT Graduates: 1971

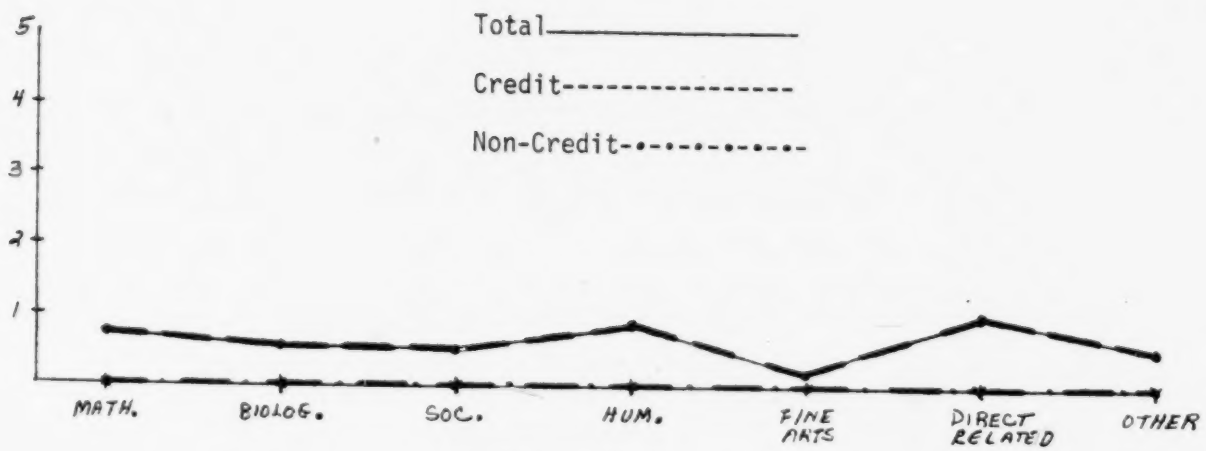


Figure 73

means were only slightly higher than that of the math category. The accumulation of continuing education courses by the last two classes was not sufficient to establish trends.

Each of the categories, with the exception of fine arts, occupied second place in at least one of the profiles. Second and third place were most often made in the "other" and " directly related to the associate degree program" categories.

Viewing the 17 DDT profiles as a whole, one can see that the main preoccupation with continuing education efforts are with mathematics and those courses related to their occupational specialization.

VII. Continuing Education Profiles for the Other Graduation Groups (Business Forestry Technology, Retailing, and Surveying Technology)

The continuing education profiles for the three business classes are displayed in Figures 74 through 76. No three year trend was found. The 1969 class (Figure 74) focused on social sciences while courses directly related to their associate degree program were selected most often by the 1971 group (Figure 76).

There is only one profile for the forestry technology program, the 1970 class (Figure 77). This group's continuing education efforts were concentrated in the math and directly related categories.

Figure 78 and 79 depict the profiles of the 1970 and 1971 retailing program graduates. The major continuing education efforts was in the "other" course area for the 1970 class.

The only surveying technology group with a continuing education profile is the 1970 class (Figure 80) where the main continuing education activities were in the math and humanities categories.

1969 BUSINESS ADMINISTRATION GRADUATES

Total Hours _____

Credit Hours - - - - - - - -

Non-Credit Hours - . - . - . -

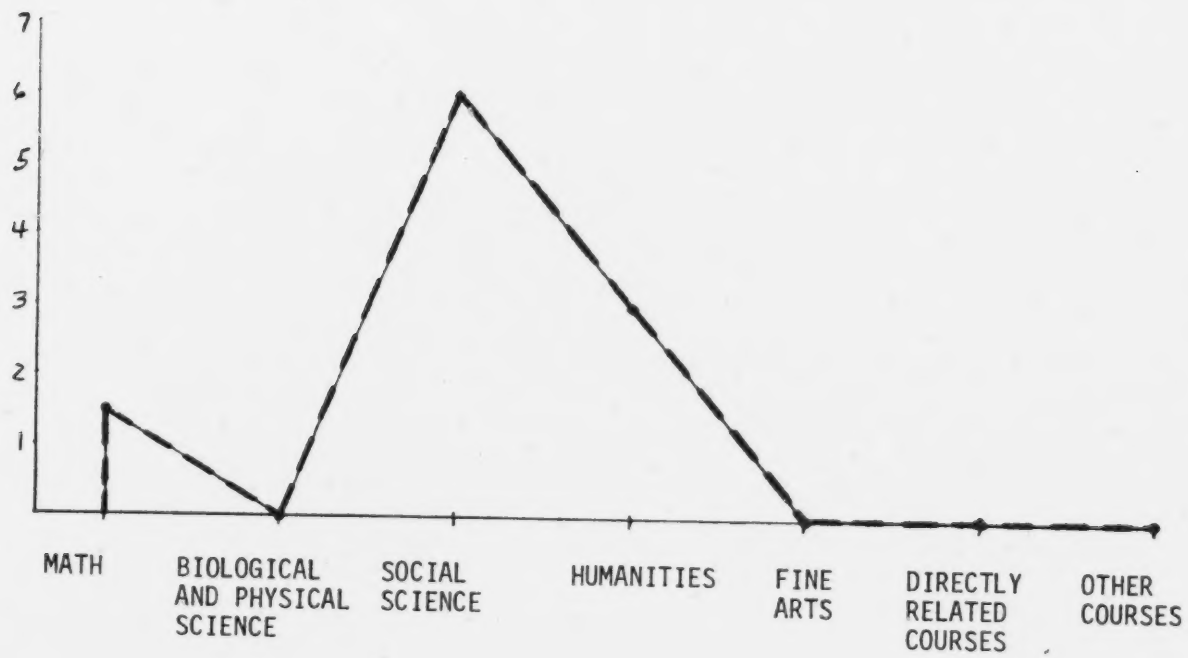


Figure 74

1970 BUSINESS ADMINISTRATION GRADUATES

Total Hours _____

Credit Hours - - - - - - - -

Non-Credit Hours - . - . - . -

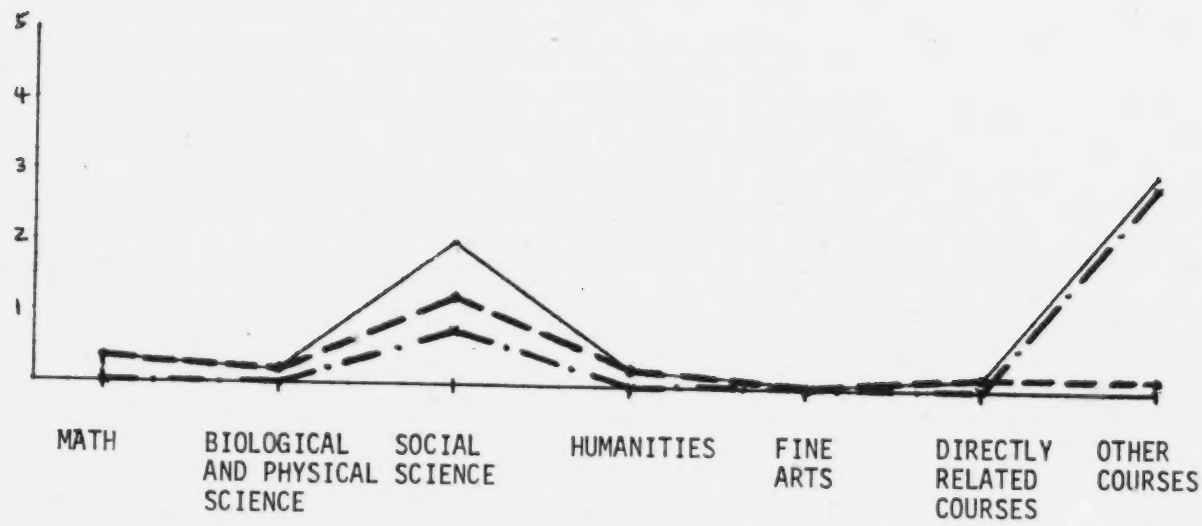


Figure 75

1971 BUSINESS ADMINISTRATION GRADUATES

Total Hours _____

Credit Hours - - - - - - - - -

Non-Credit Hours- · - · - · - · -

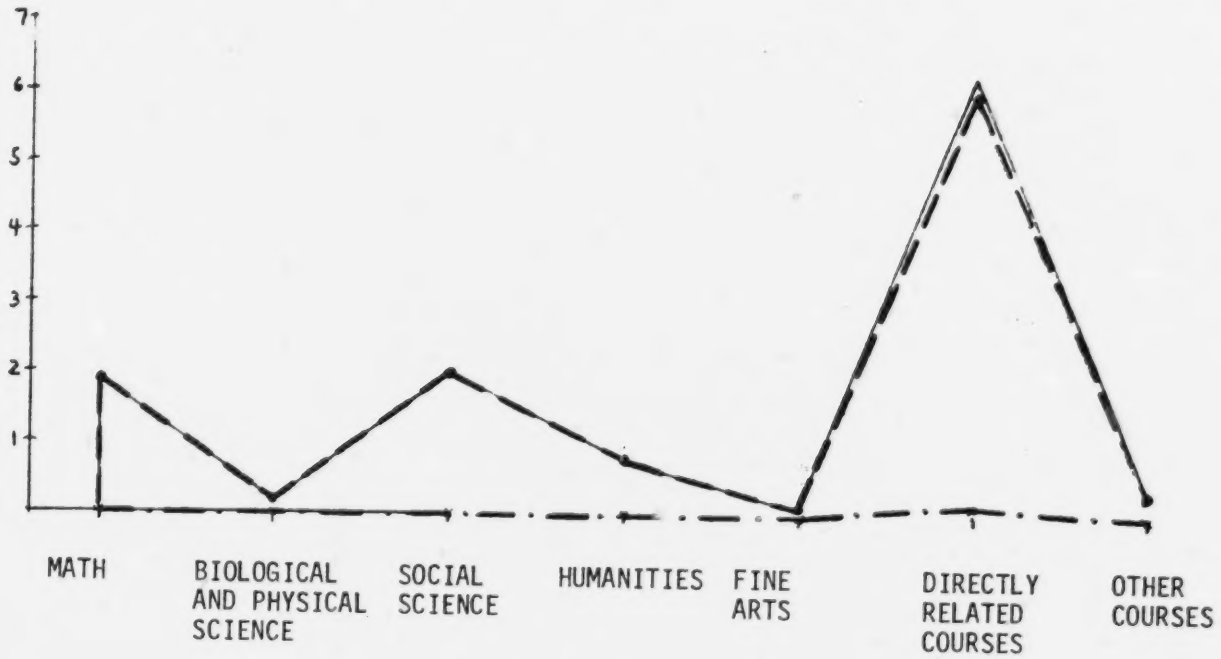


Figure 76

1970 FORESTRY TECHNOLOGY GRADUATES

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

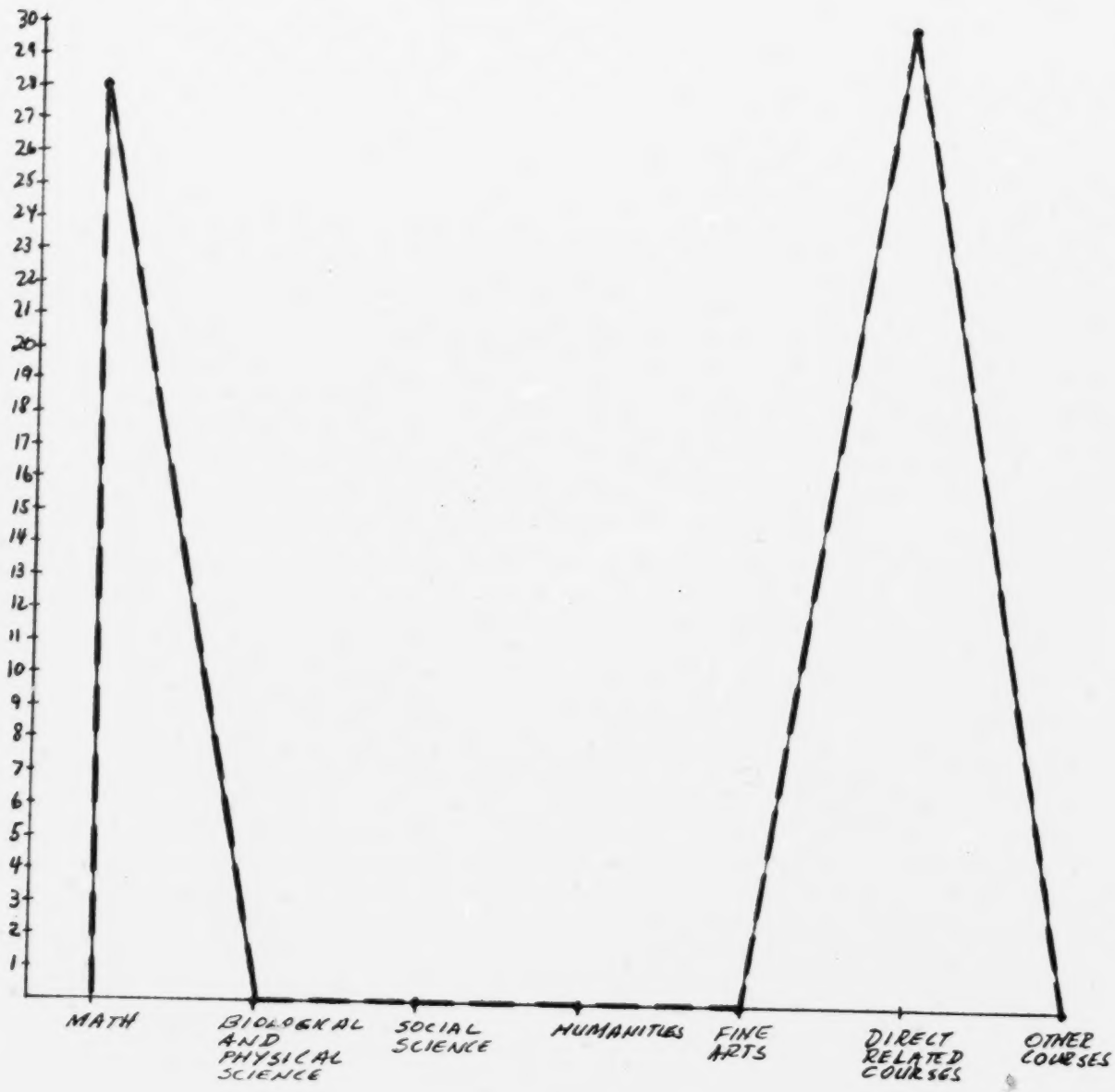


Figure 77

1970 RETAILING GRADUATES

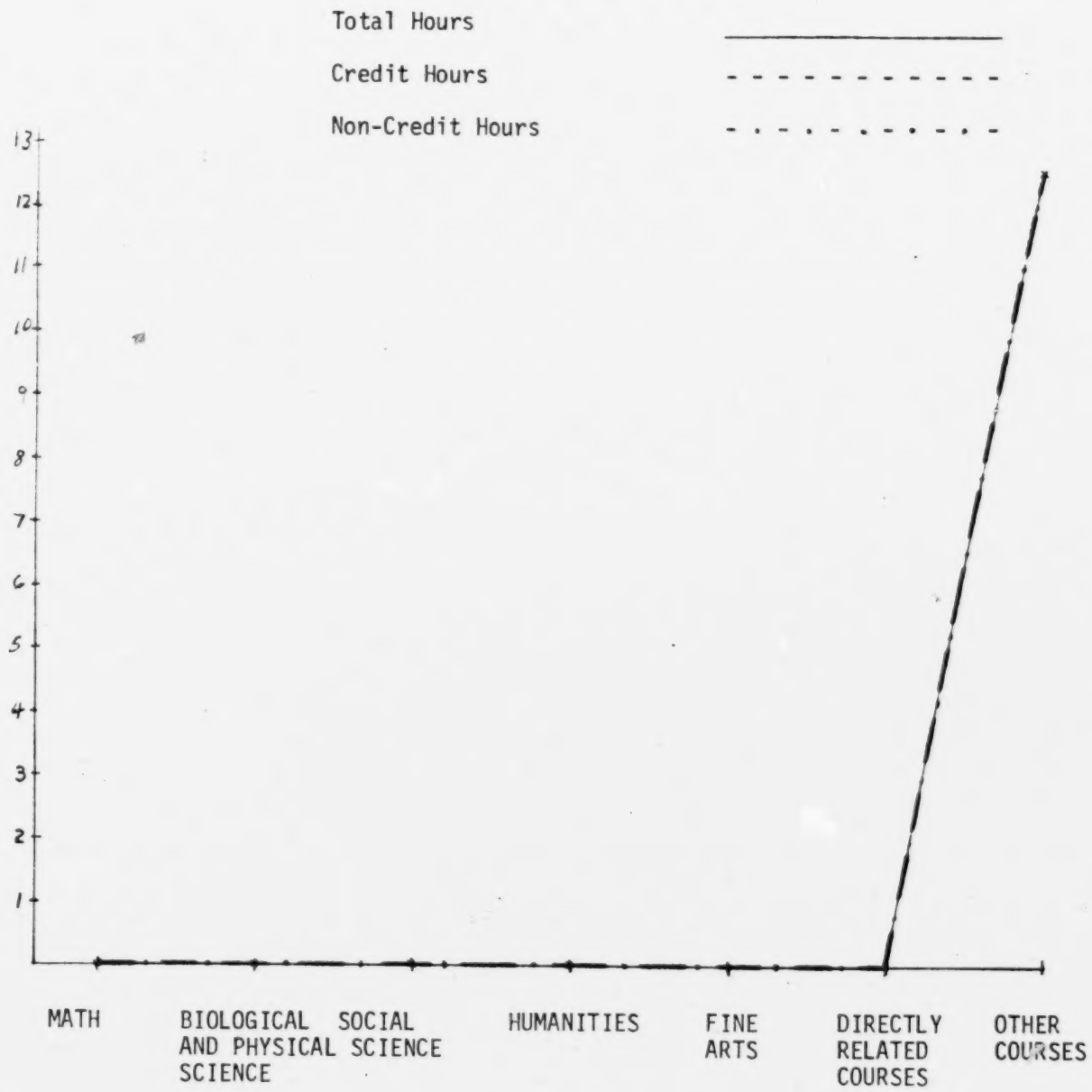


Figure 78

1971 RETAILING GRADUATES

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

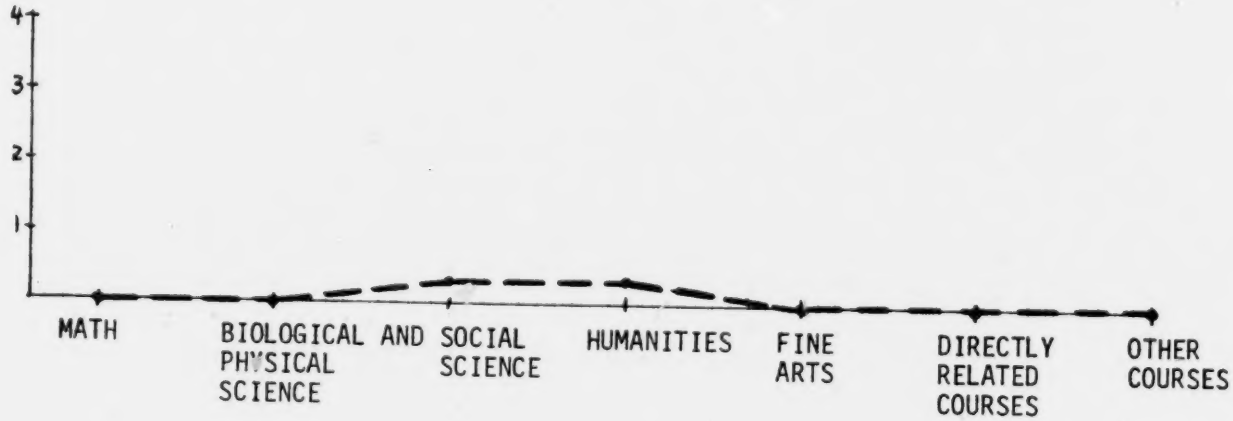


Figure 79

SURVEYING TECHNOLOGY
GRADUATES: 1970

Total Hours _____

Credit Hours - - - - - - - - -

Non Credit Hours- . - . - . - . -

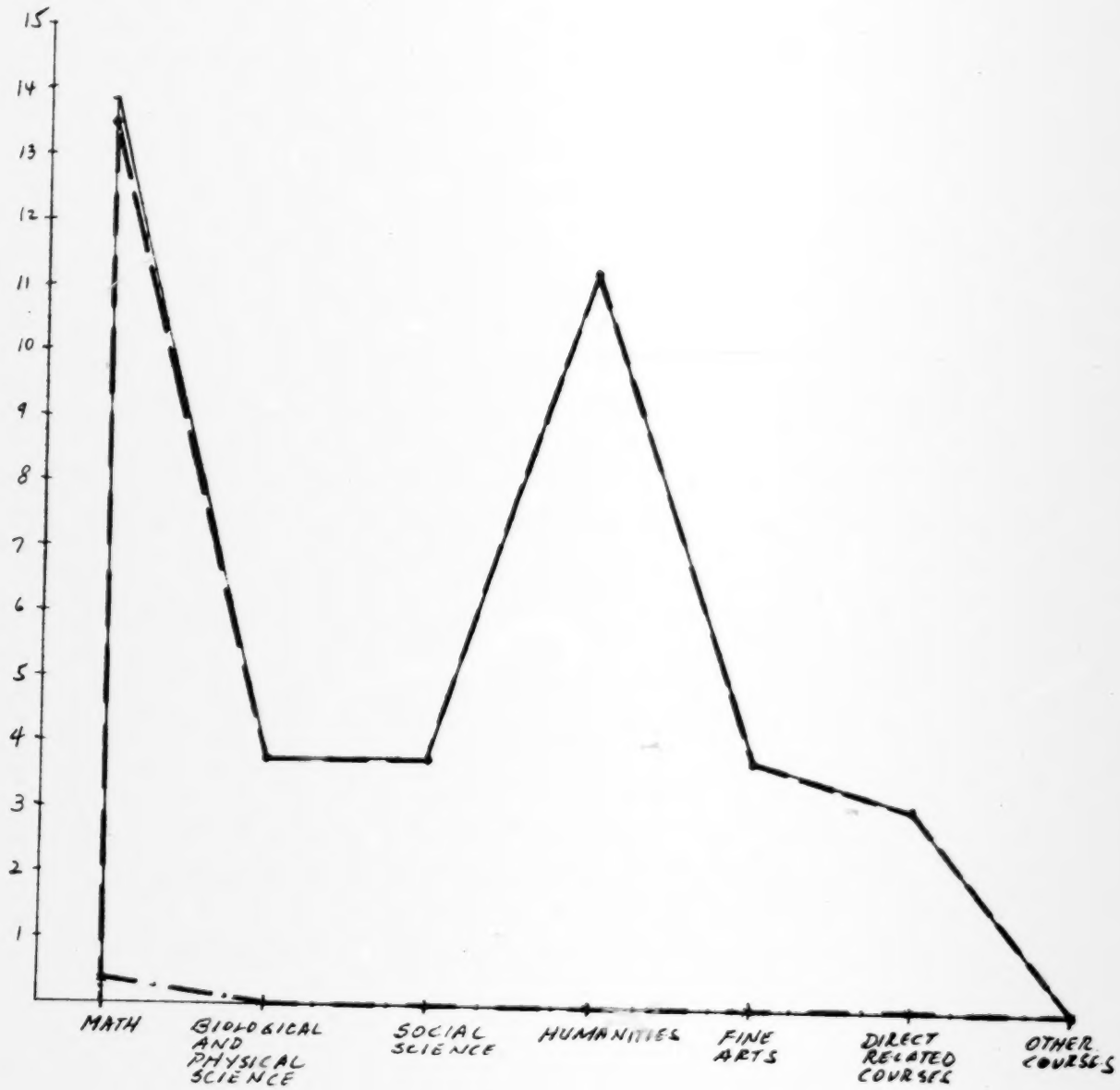


Figure 80

Because these four curriculums have only a few graduation groups, the continuing education efforts reported do not reveal a trend of any sort.

VIII. Continuing Education Profiles for all Graduates by Class

The continuing education profiles for the entire sample by graduation year are displayed in Figures 81 through 97. When masking curriculums by examining all graduates for each graduation class, the earlier denoted trend was much in evidence. The majority of the classes (12) focused on mathematics as their heaviest continuing education activity. For three classes (1959, 1964, and 1969), the greatest amount of continuing education courses were in the "other" category. No clear trend was apparent for the last two classes (1970 and 1971), since these graduates haven't been out long enough to accumulate sizable continuing education credit hours.

Although math was most popular in terms of credit hours, courses in the "directly related to their associate degree programs" category was the second or third most active category for most of the classes. This resulted in many of the classes having "U-shaped" profiles. There was measurable activity in the social science and biological-physical science categories, but consistently lower than the three mentioned above. Fine arts bottomed out in every case, followed closely by courses in the humanities category.

IX. Some Relationships Between Continuing Education Courses Taken and Several Other Variables

It should be noted that only 1210 of the more than 1400 total sample responded to this item.

ALL GRADUATES: 1955

Total Hours ————————
Credit Hours - - - - - - - - -
Non Credit Hours - . -- - . - . -

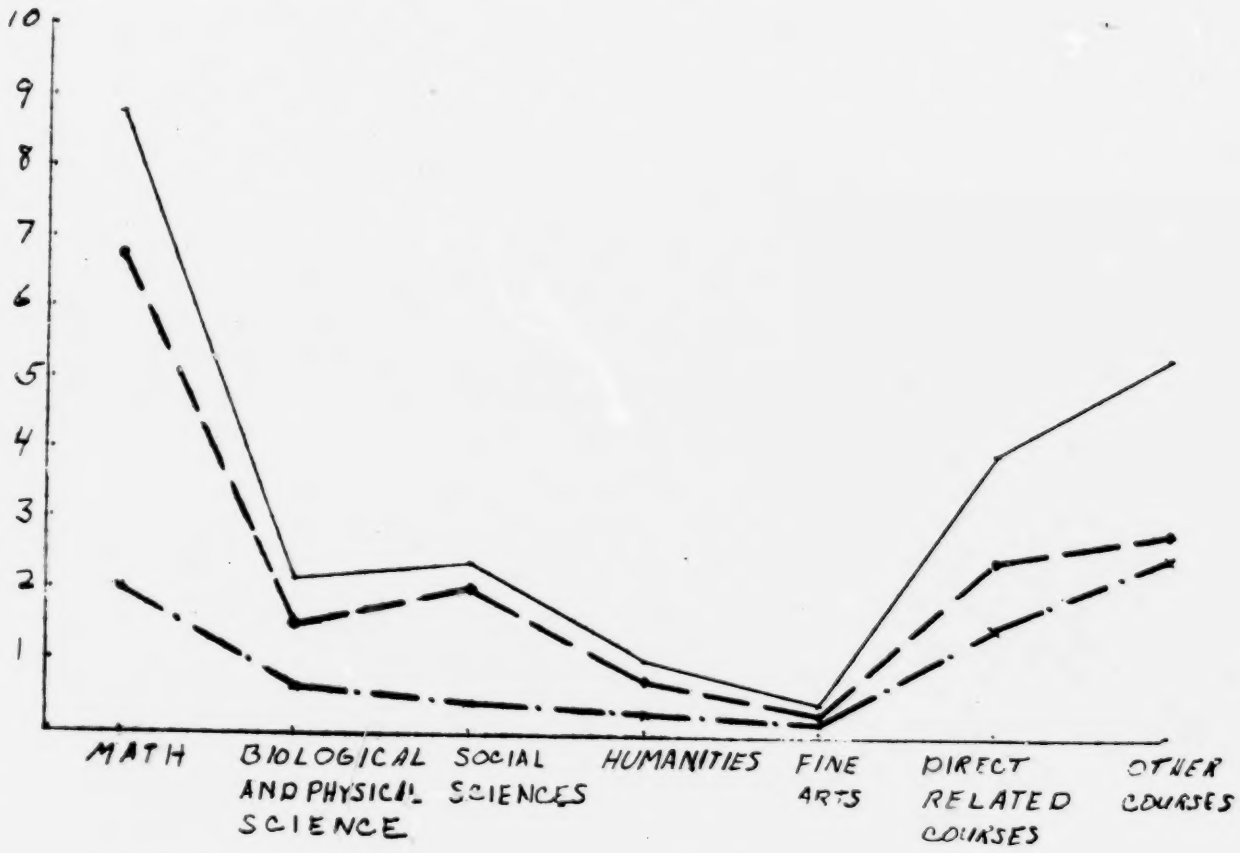


Figure 81

ALL GRADUATES: 1956

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - · - · - · - · -

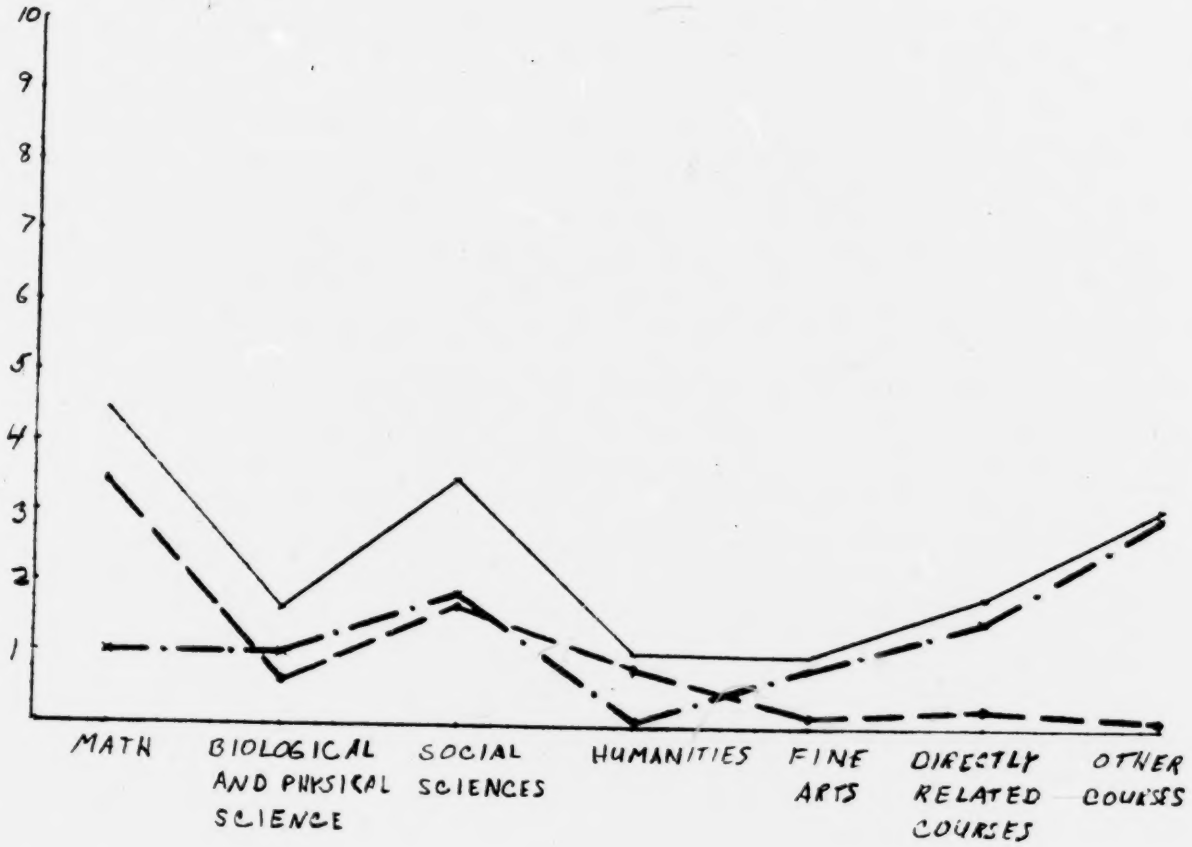


Figure 82

ALL GRADUATES: 1957

Total Hours _____

Credit Hours - - - - - - - - -

Non-Credit Hours - . - . - . - . -

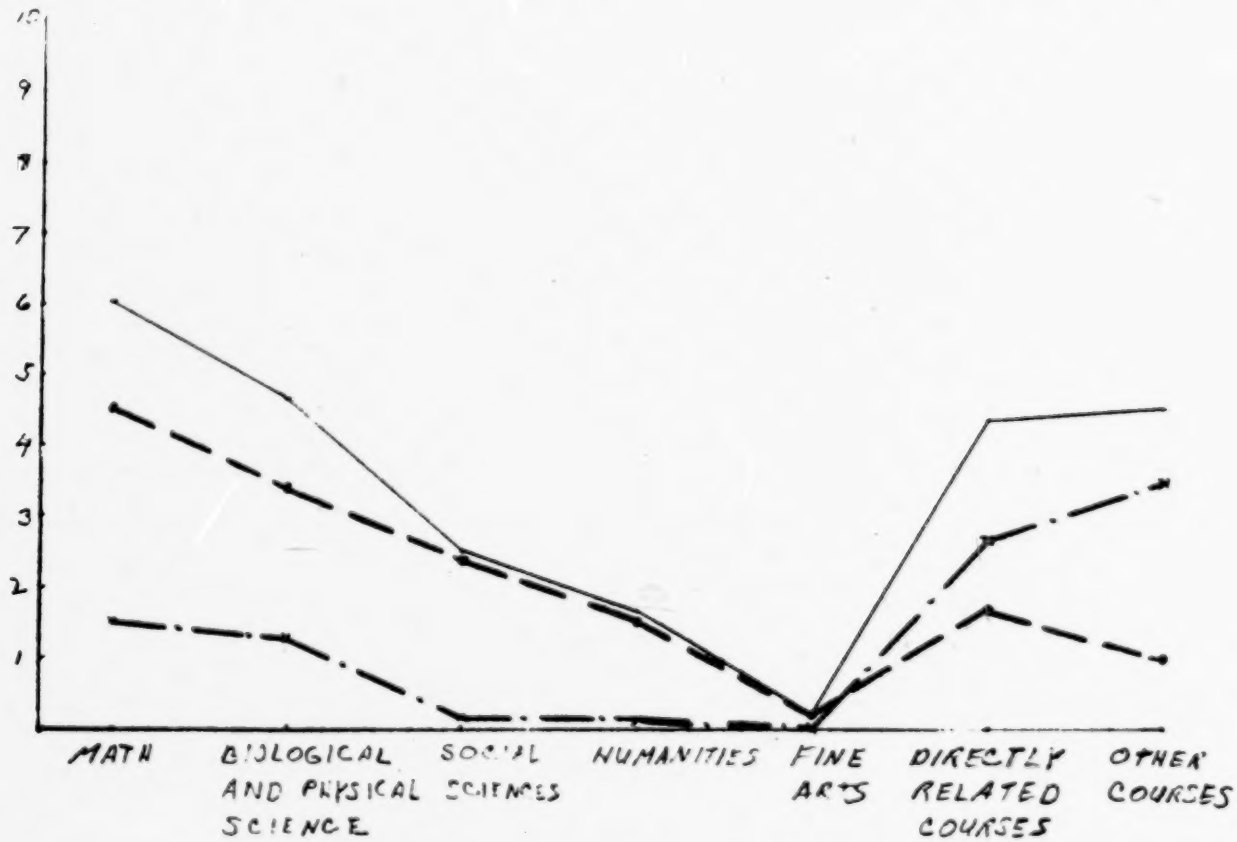


Figure 83

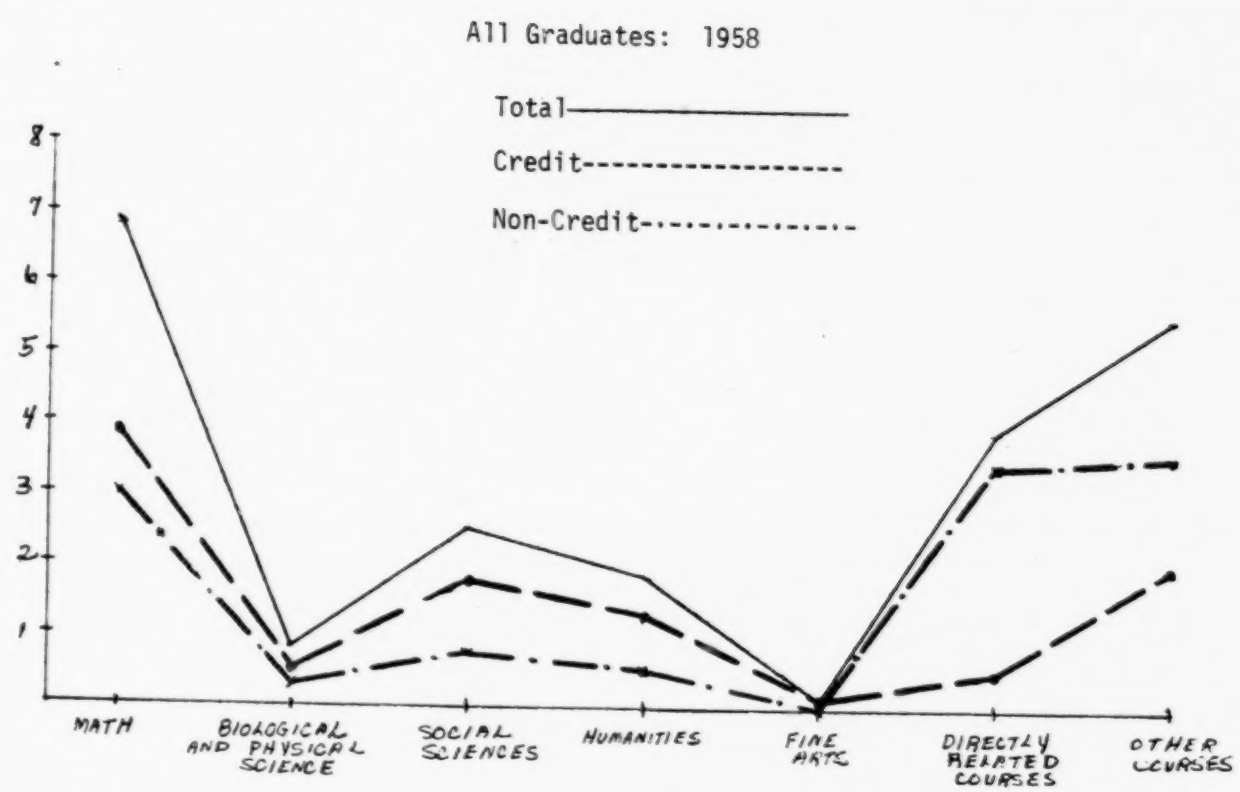

All Graduates: 1958
Total
Credit
Non-Credit
8
7
6
5
4
3
2
1
MATH
BIOLOGICAL AND PHYSICAL SCIENCE
SOCIAL SCIENCES
HUMANITIES
FINE ARTS
DIRECTLY RELATED COURSES
OTHER COURSES

Figure 84

ALL GRADUATES: 1959

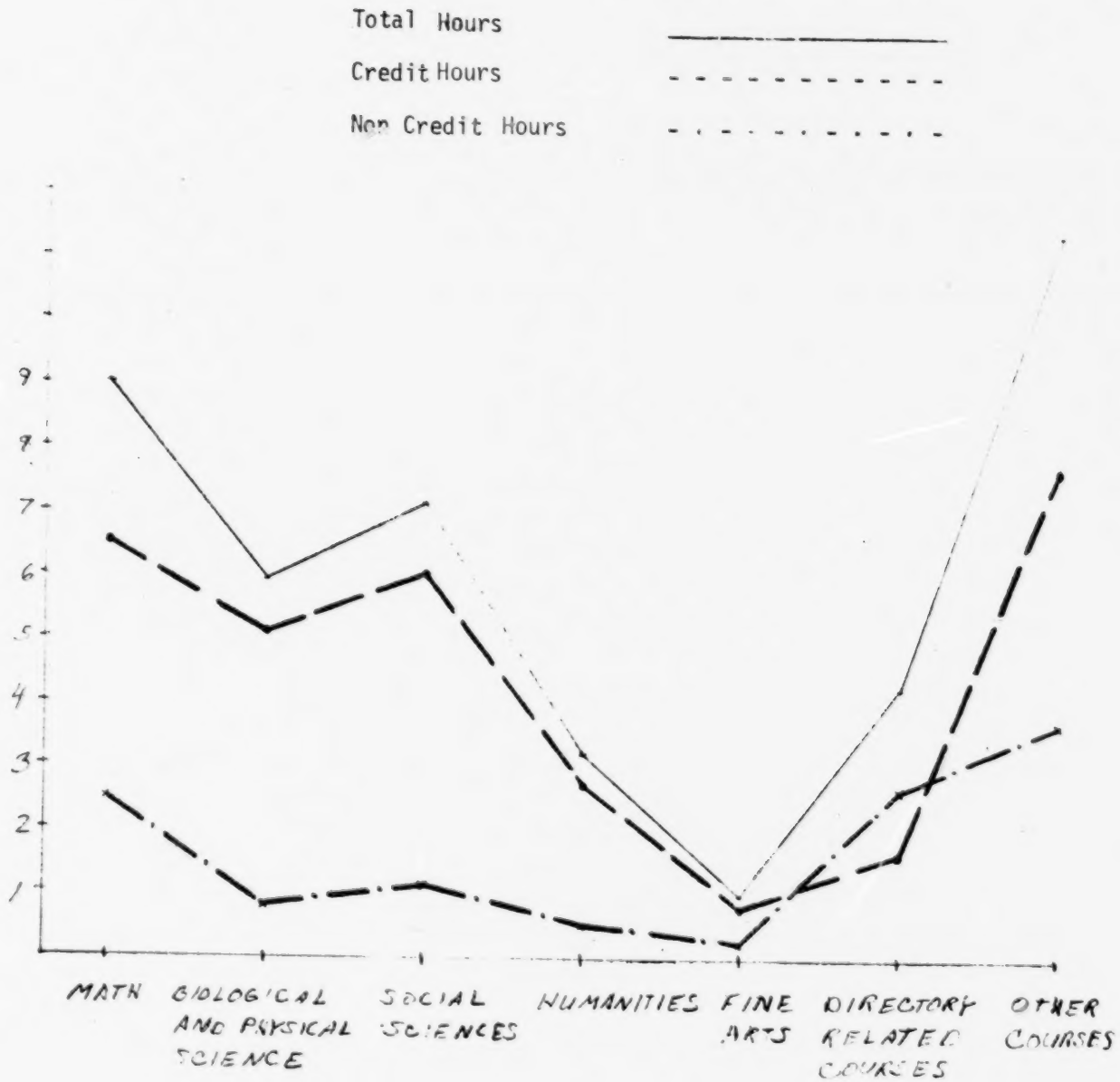


Figure 85

ALL GRADUATES: 1960

Total Hours _____

Credit Hours - - - - - - - - - - - - -

Non-Credit Hours - . - . - . - . - . -

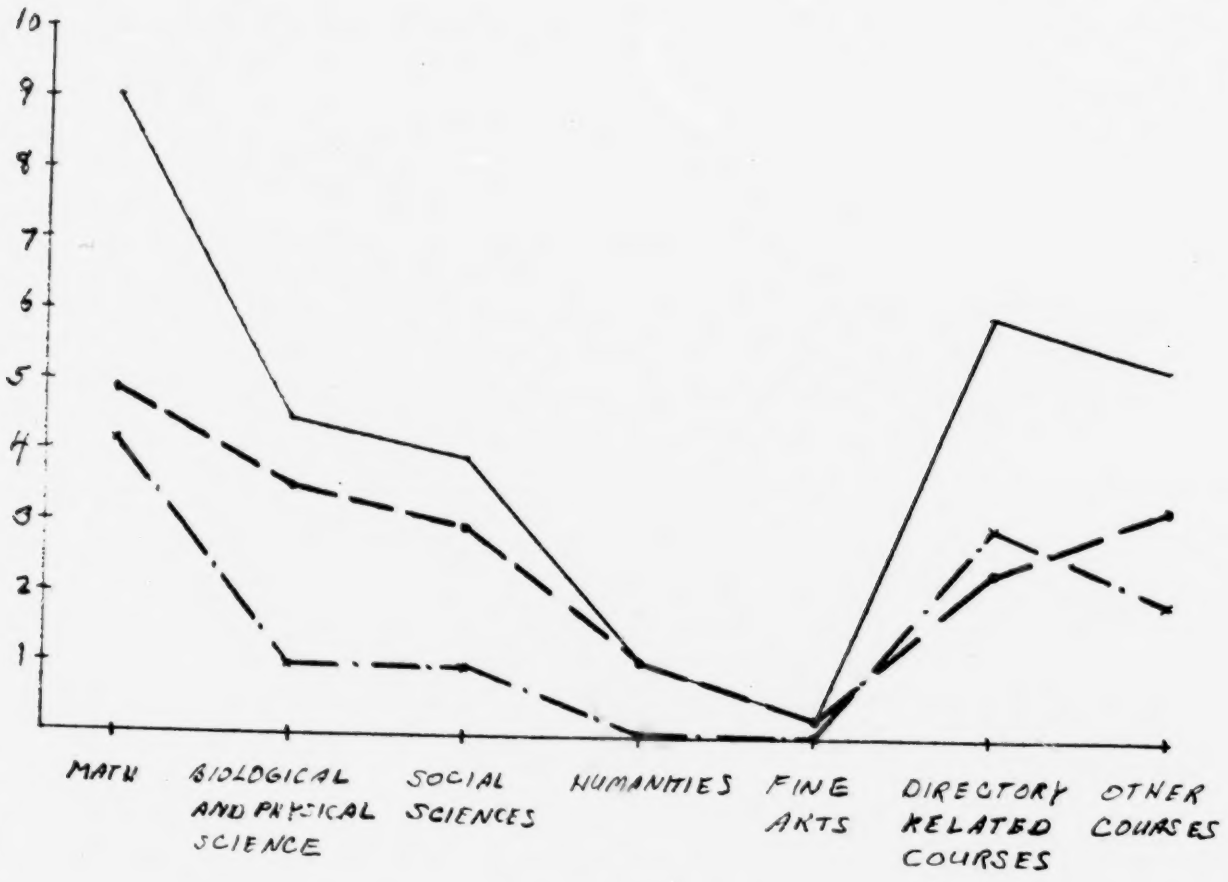


Figure 86

ALL GRADUATES: 1961

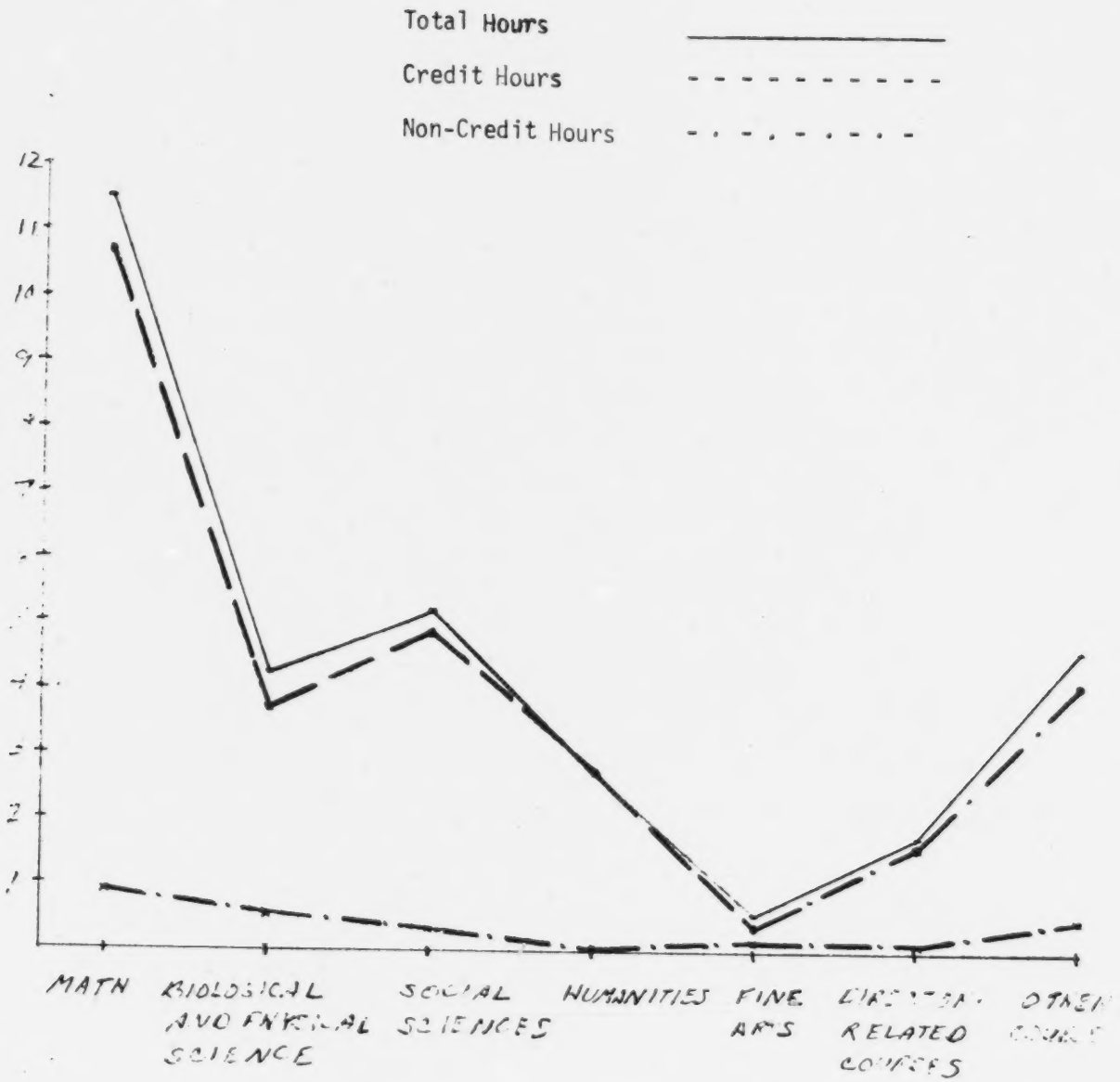


Figure 87

ALL GRADUATES: 1962

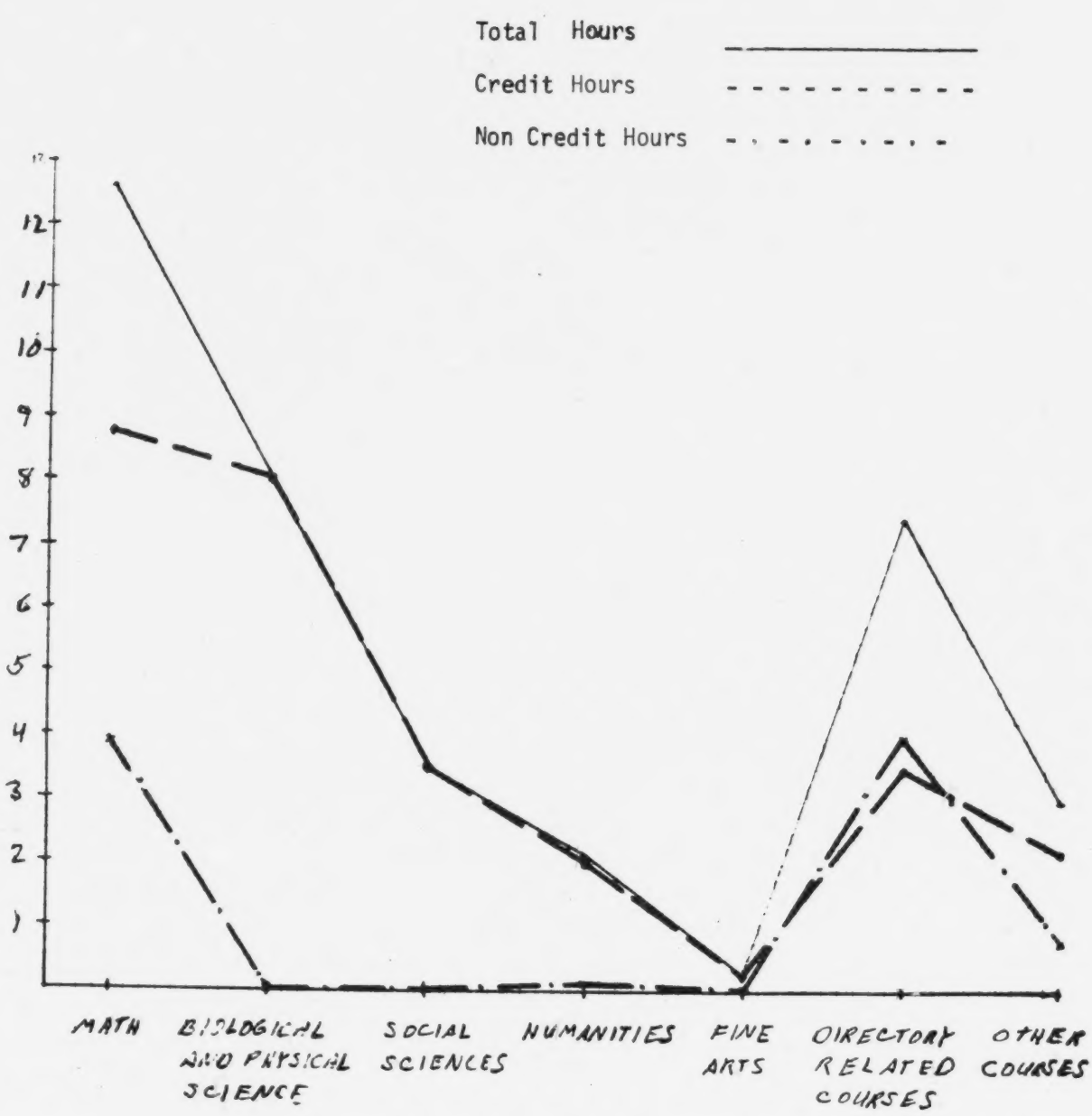


Figure 88

ALL GRADUATES: 1963

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

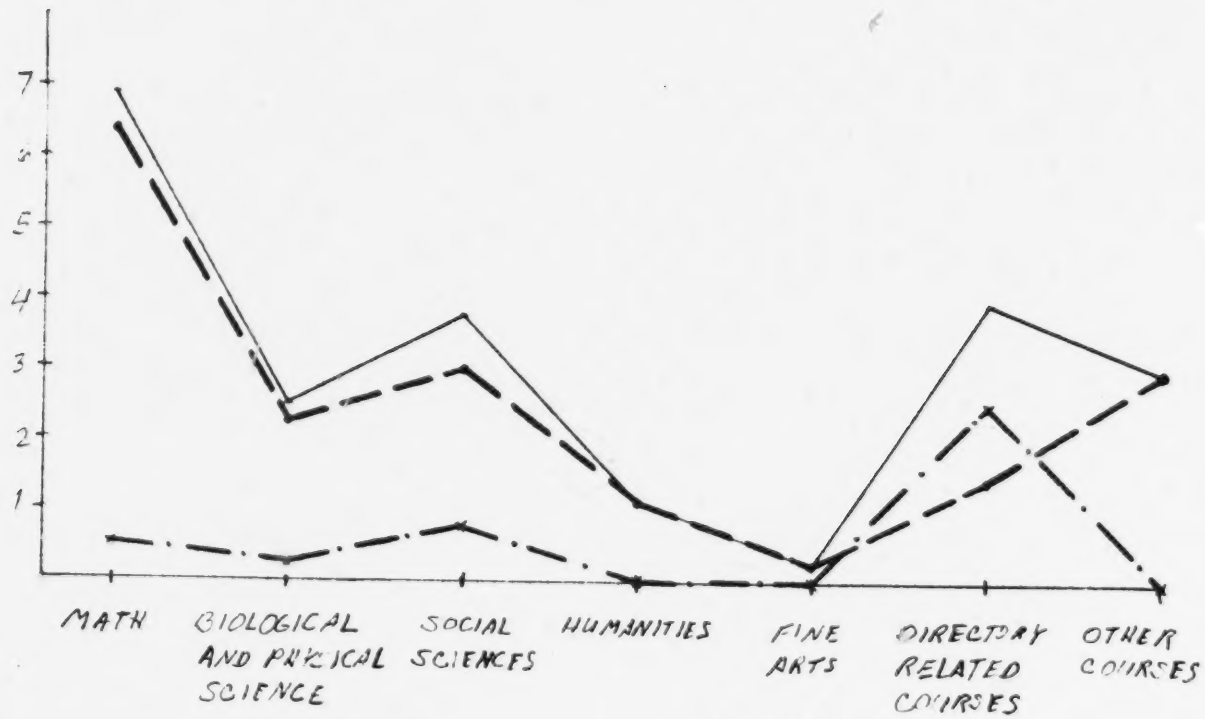


Figure 89

ALL GRADUATES: 1964

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

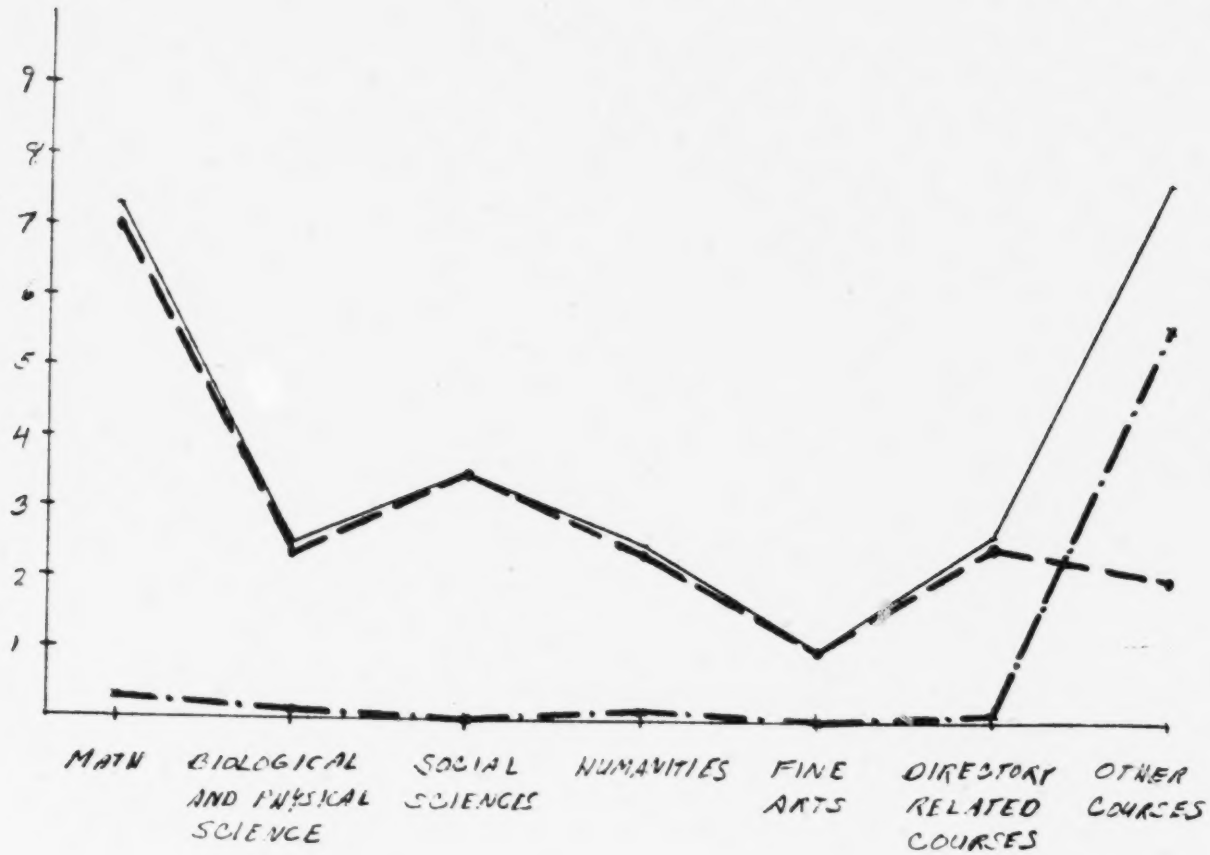


Figure 90

ALL GRADUATES: 1965

Total Hours _____

Credit Hours - - - - - - - - - - - -

Non-Credit Hours - . - . - . - . - . -

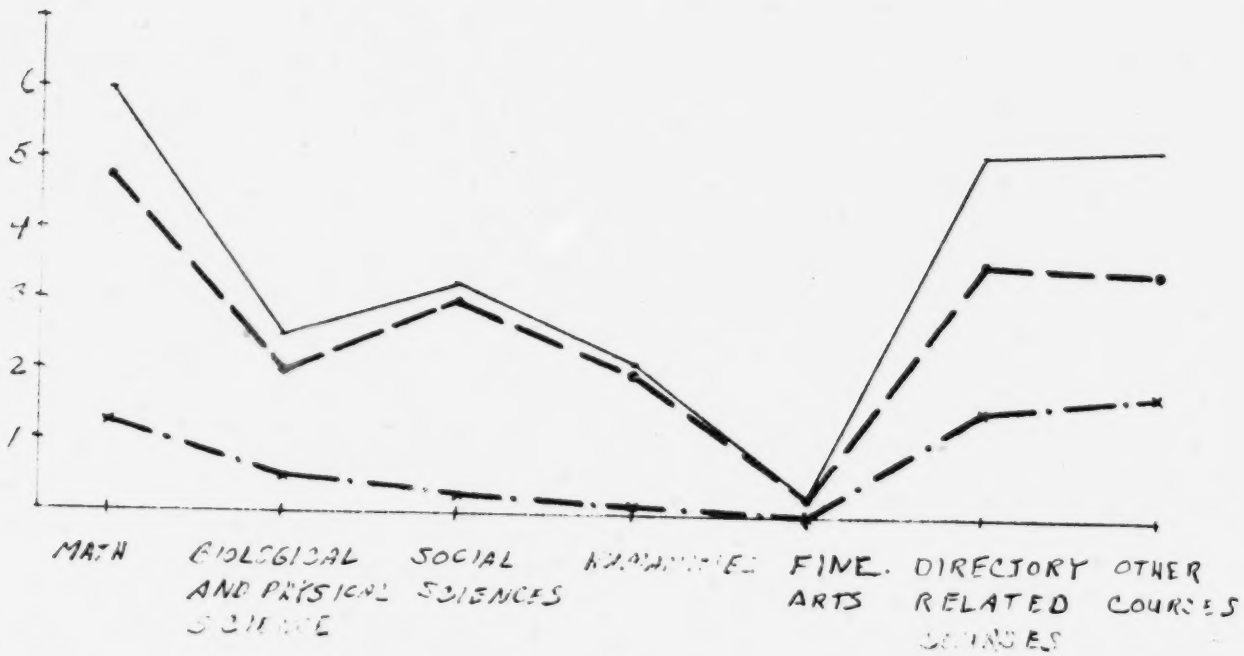


Figure 91

ALL GRADUATES: 1966

Total Hours _____

Credit Hours - - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

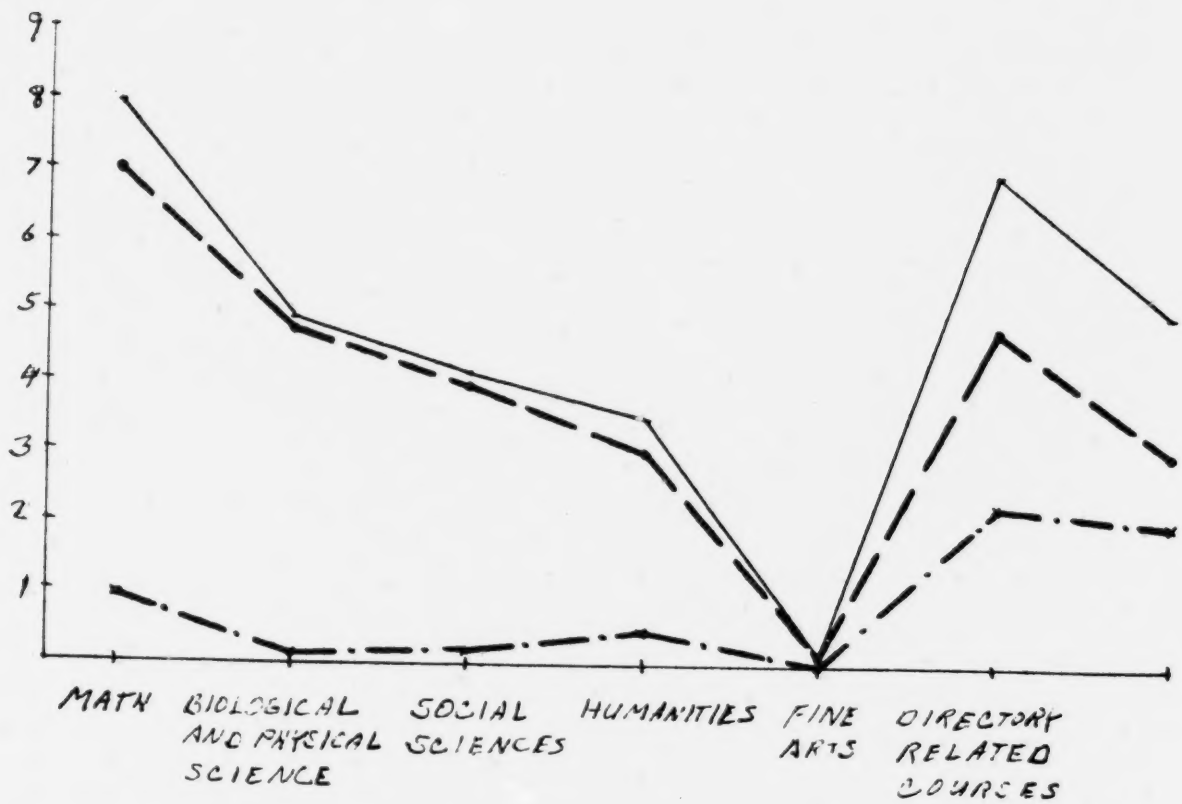


Figure 92

ALL GRADUATES: 1967

Total Hours _____

Credit Hours - - - - - - - - - - - -

Non-Credit Hours - . - . - . - . - . -

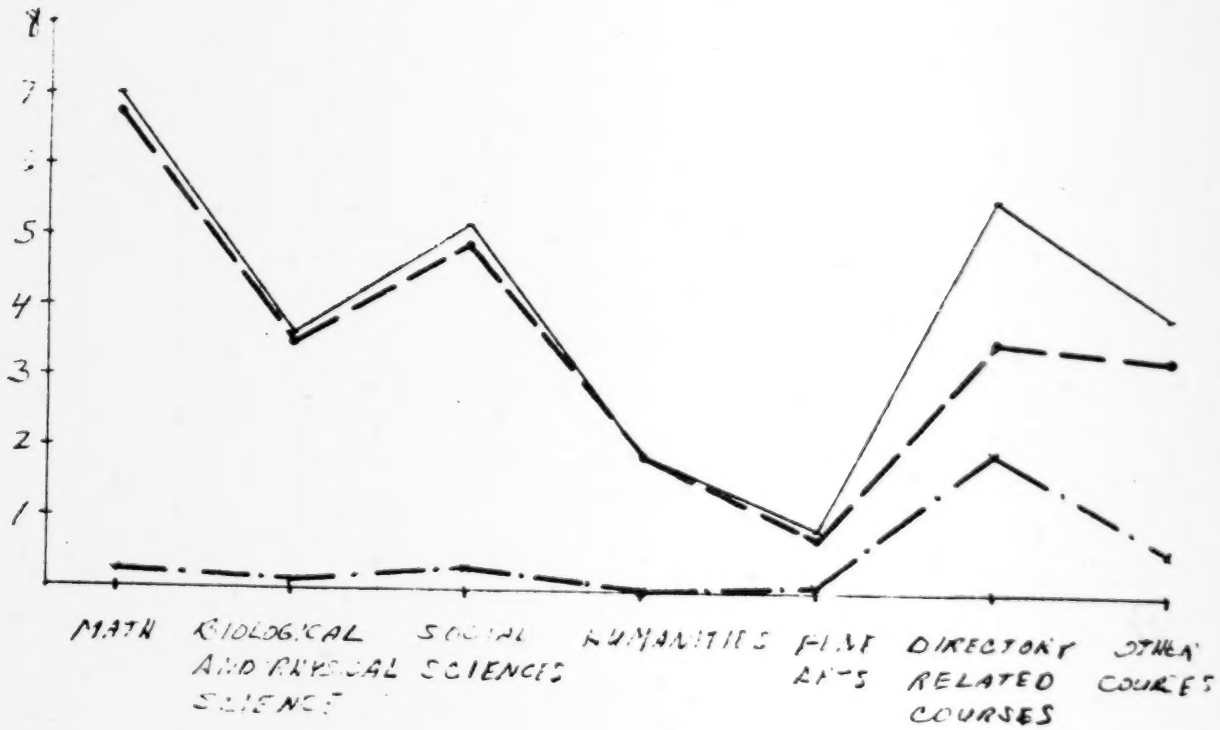


Figure 93

TOTAL 1968 CLASS

ALL GRADUATES 1968

Total Hours _____

Credit Hours - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

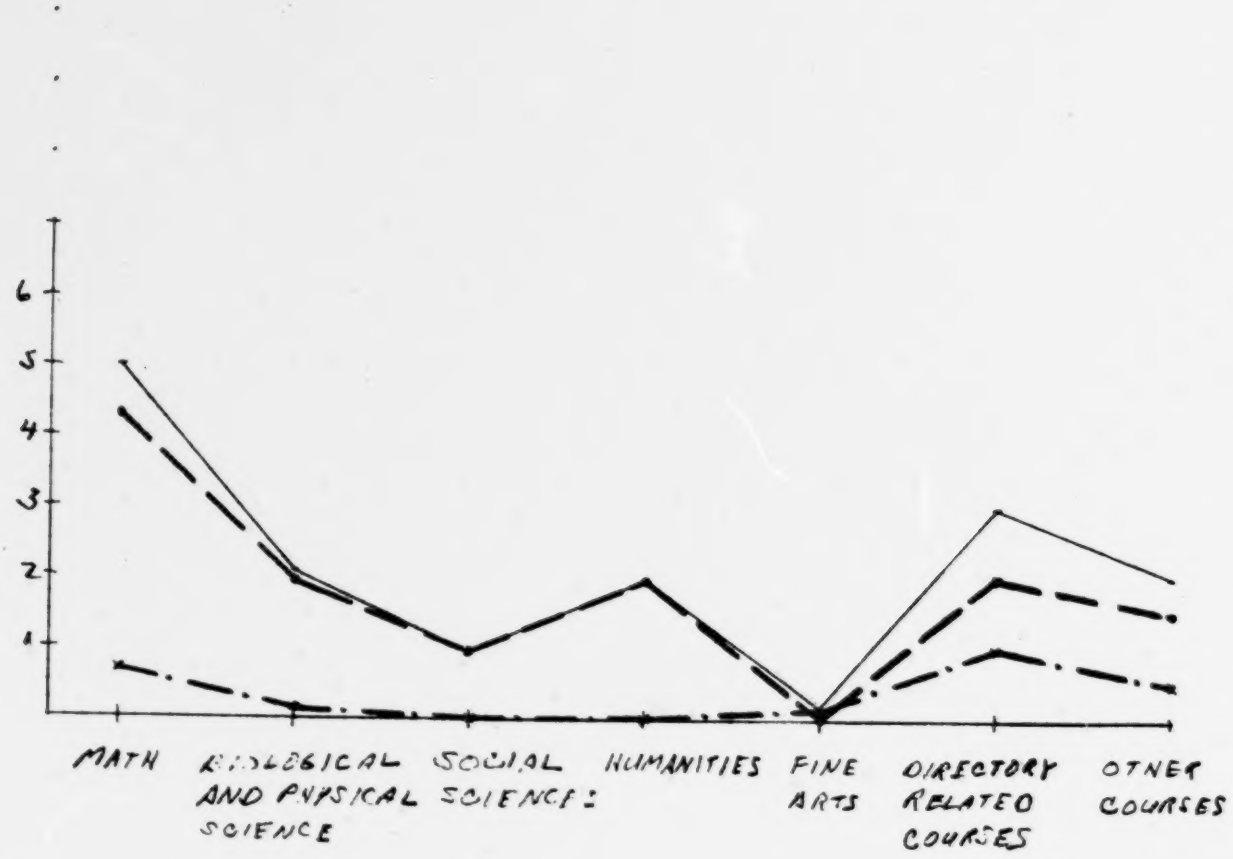


Figure 94

ALL GRADUATES: 1969

Total Hours _____

Credit Hours - - - - - - - - - - -

Non-Credit Hours - . - . - . - . -

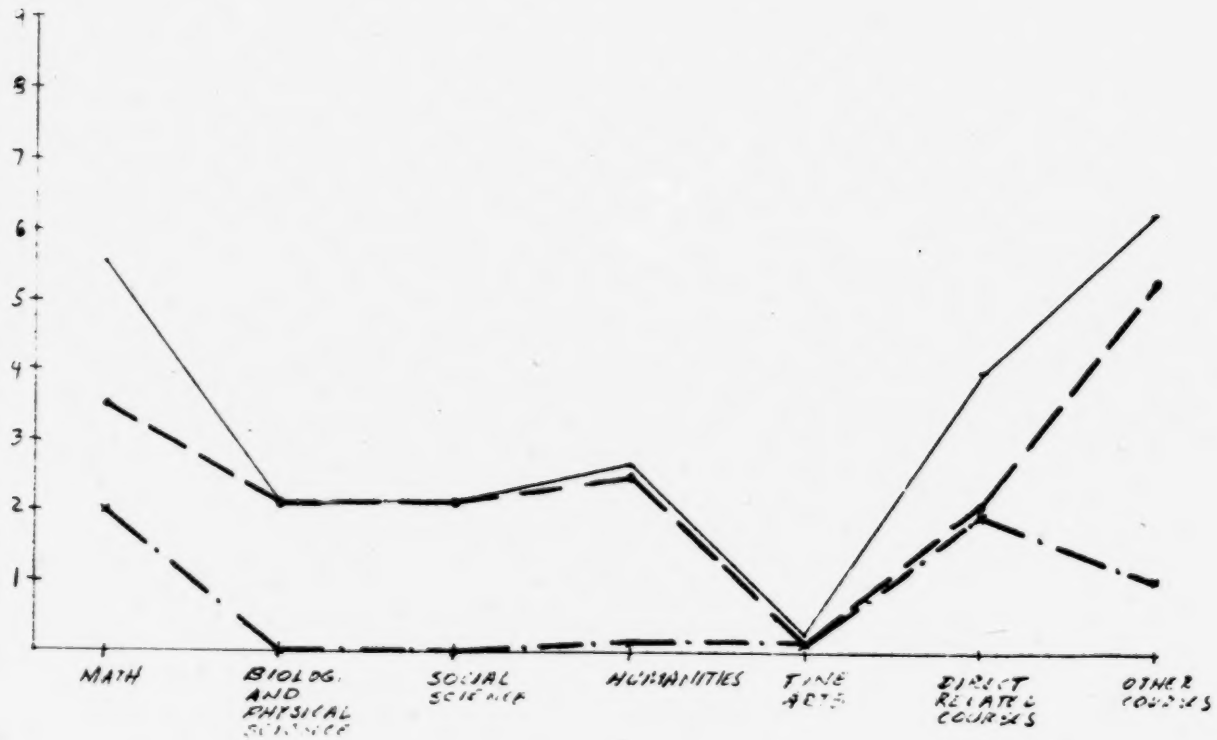


Figure 95

ALL GRADUATES: 1970

Total Hours _____

Credit Hours - - - - - - - - -

Non-Credit Hours - . - . - . - . -

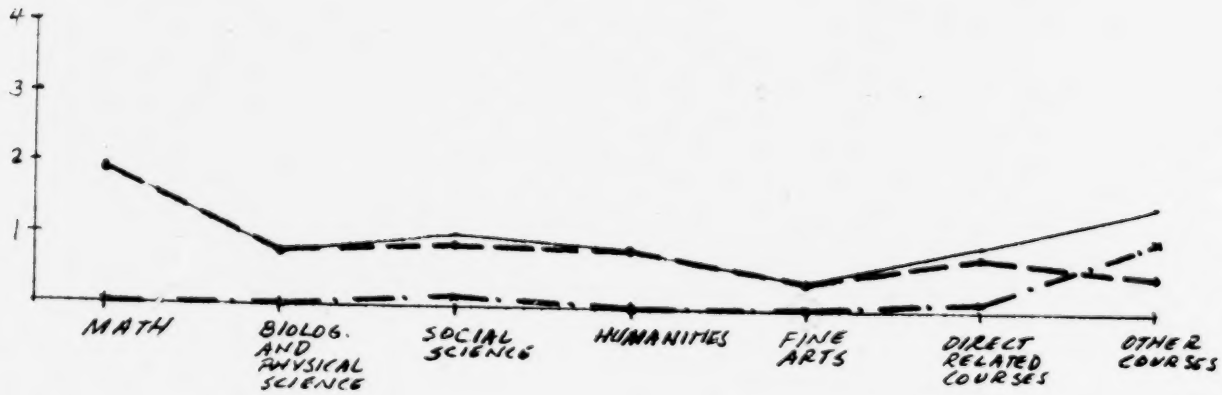


Figure 96

ALL GRADUATES: 1971

Total Hours _____

Credit Hours - - - - - - - -

Non-Credit Hours - . - . - . -

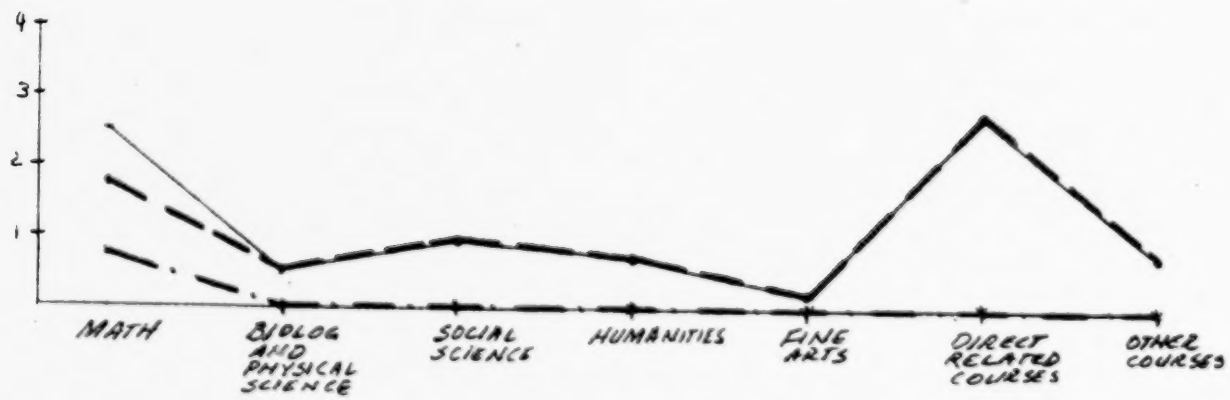


Figure 97

Using the Pearson Product Moment Correlation Statistic, several relationships were examined.

The first relationship examined was between year of graduation (1955-71) and hours completed in each of the seven continuing education course categories (see Table 4). Since there were two components in each course category (credit and non-credit courses), a total of 14 relationships were examined. Only five of these were significant at .001 to .1 level, and the correlation coefficient values ranged from a low of -.05 to a high of -.22 (see Table 4). With such low values we can assume the relationships were not strong.

The second relationship examined was between year of graduation and hours completed in the continuing education courses categories, and was restricted to those whose highest academic award was the associate degree. The sample size for the test was 1043. When sorting out the sample in this manner, 10 of the 14 relationships were found to be significant between the .1 and .001 levels. But, as in the first case, the significant correlation coefficients were not very large (they ranged between -.05 to -.35). The slightly larger values indicated only mildly stronger relationships (see Table 5).

The third relationship was between year of graduation and hours completed in the continuing education course categories, and this time was restricted to those whose highest degree was the bachelors or above. The sample size was 159. Even less impressive results were obtained, with only two significant relationships found (both at the .1 level). In both cases the correlation coefficient was about .14, indicating again rather weak relationships (see Table 6).

TABLE 4

RELATIONSHIP BETWEEN YEAR OF GRADUATION AND HOURS COMPLETED IN CONTINUING EDUCATION SUBJECT AREAS FOR ALL GRADUATES

Course Category	Correlation Coefficient	Significance
Math (credit)	-0.0332	NS
(non-credit)	-0.0421	NS
Bio-physics (credit)	-0.0515	-.1
(non-credit)	-0.1073	-.001
Soc. Science (credit)	-0.0508	-.1
(non-credit)	-0.2223	-.001
Humanities (credit)	0.0250	NS
(non-credit)	-0.0047	NS
Fine Arts (credit)	0.0168	NS
(non-credit)	-0.0127	NS
Directly Related (credit)	0.0449	NS
(non-credit)	-0.0059	NS
Other (credit)	0.0272	NS
(non-credit)	-0.0526	-.1
N = 1210		

TABLE 5

RELATIONSHIP BETWEEN YEAR OF GRADUATION AND CONTINUING EDUCATION COURSE HOURS COMPLETED IN COURSE CATEGORIES FOR THOSE WHOSE HIGHEST DEGREE WAS THE ASSOCIATE DEGREE

Course Category	Correlation Coefficient	Significance
Math (credit) (non-credit)	-0.3531 0.0422	+.001 NS
Bio-Physics (credit) (non-credit)	-0.3536 0.0365	+.001 NS
Soc. Science (credit) (non-credit)	-0.3898 0.0546	+.001 +.1
Humanities (credit) (non-credit)	-0.2696 0.0423	-.001 NS
Fine Arts (credit) (non-credit)	-0.1296 0.0197	-.001 NS
Directly Related (credit) (non-credit)	-0.2723 0.0638	-.001 +.05
N = 1043		

TABLE 6

RELATIONSHIP BETWEEN YEAR OF GRADUATION AND CONTINUING EDUCATION COURSE HOURS COMPLETED IN COURSE CATEGORIES FOR THOSE WHOSE HIGHEST DEGREE WAS A BACHELORS OR ABOVE

Course Category	Correlation Coefficient	Significance
Math (credit)	0.1184	NS
(non-credit)	-0.0378	NS
Bio-Physics (credit)	0.0884	NS
(non-credit)	erroneous data	
Soc. Science (credit)	0.0029	NS
(non-credit)	-0.0364	NS
Humanities (credit)	0.0066	NS
(non-credit)	0.1330	+.1
Fine Arts (credit)	0.0157	NS
(non-credit)	-0.0403	NS
Directly Related (credit)	-0.1034	NS
(non-credit)	-0.0471	NS
Other (credit)	0.1439	+.1
(non-credit)	-0.0401	NS
N = 159		

X. Other Findings Extracted from the Data

The following general statements were derived from examination of the findings.

1. A total of 670 graduates (55.4 percent of the sample) had taken at least one course since the completion of their associate degree. Stating this conversely, 540 graduates (44.6 percent of the sample) had not taken any courses since the completion of their associate degree.

2. Two hundred seventy-six graduates (22.8 percent of the sample) were working toward another degree at the time they were queried.

3. A total of 100 (36.2 percent of those presently working toward another degree) were full-time students while 170 (63.8 percent of those working toward another degree) were part-time students.

4. From the sample of 1210 graduates who responded to the continuing education queries, 141 (11.6 percent) had completed the bachelors, 18 (1.5 percent) had completed the masters, and one (0.8 percent) completed the doctorate.

Another question asked related to who paid for the continuing education courses. The responses to the nine possible answers are shown in Table 7. Of interest to continuing educators is that over half of the courses taken since graduation by all the graduates were either totally or partially paid for by their employers.

On the other hand, the results showed the great majority of the graduates took continuing education courses on their own time, as displayed in Table 8.

From the above, it is seen that the amount of continuing education taken by the associate degree graduates is considerable, and that much of it is supported by employers. The following section draws conclusions and proposes suggestions, based upon these findings.

TABLE 7

COURSES COMPLETED WERE PAID FOR

	All Graduates		Graduates Currently Working Toward Another Degree		Graduates Who Have Taken At Least One Course Since A.A.	
	N	%	N	%	N	%
Employer Paid for All	154	27.5	57	26.9	145	32.7
Employer paid for more than half	148	26.4	59	27.8	123	27.7
I paid for all of them	75	13.4	34	1.60	64	14.4
I paid for more than half	28	5.0	13	6.1	23	5.2
G.I. Bill paid for all of them	45	8.0	23	10.8	38	8.6
G.I. Bill paid for more than half	24	4.3	9	4.2	18	4.1
All were paid by other means	23	4.1	13	6.1	19	4.3
More than half were paid by other means	0	0	0	0	0	0
None of the above	63	11.3	4	1.9	14	3.2
TOTAL	560	100	212	100	444	100

TABLE 8

THE COURSES TAKEN SINCE COMPLETING THE ASSOCIATE DEGREE WERE

	All Graduates		Graduates Currently Working Toward Another Degree		Graduates Who Have Taken at Least One Course Since A.A.	
	N	%	N	%	N	%
All taken on Company Time	72	9.8	1	.4	53	8.2
More than half taken on Company Time	54	7.4	5	1.9	38	5.9
All taken on own time	552	75.5	252	93.7	508	78.3
More than half taken on own time	53	7.3	11	4.1	50	7.7
TOTALS	731	100.0	269	100.0	649	100.0

CONCLUSIONS AND SUGGESTIONS

The findings provide a basis to examine the continuing education activities of The Pennsylvania State University Associate Degree Graduates in several ways. First, the type of continuing education courses selected, in terms of seven generic categories for all graduates, and by curriculum type, has been found. The seven generic categories were: (a) Mathematics; (b) Biological and Physical Sciences; (c) Social Sciences; (d) Humanities; (e) Fine Arts; (f) Courses Directly Related to Associate Degree Programs; (g) Other Courses. Since some continuing education courses are offered for credit, while others are not, provisions for indicating each variety was provided in the questionnaire.

Secondly, the graduates were queried as to the financing of their continuing education endeavors and when the courses were taken (during normal working hours or on their own time).

The information was obtained in several ways, as indicated in the findings section. The following conclusions and suggestions are made in the same general order in which the Findings were presented. First, it can be said that continuing education is an important activity for these graduates, as evidenced by the fact that 55% of them took one or more such courses since graduation. Furthermore, about 14% had already earned degrees beyond the Associate and another 36% indicated they were working toward another degree.

Upon examination of courses taken by graduates of all years and all curriculums, continuing education courses in the generic area of Fine Arts

are of virtually no interest to this sample. This was found to be equally true of all the graduates (regardless of curriculum and the time since graduation). Therefore, the belief that the older graduates, after 'plateauing off" in their careers, would turn to continuing education courses of an avocational nature is not manifested by their participation in Fine Arts courses.

Courses in the Mathematics category were the most often selected continuing education activity for most graduation groups. Furthermore, they held a strong second place in most of the groups where another category received a higher average. From this, it is reasonable to conclude that course taking in the area of Mathematics, particularly the formal type in which academic credit is provided, is the most frequent continuing education endeavor for those who elect to take courses after they receive their Associate Degree. Another observation is that courses in the "Other" category are second in popularity for several of the graduation groups. When designing the questionnaire, this was intended to be a catch-all category for those continuing education courses that could not be conveniently placed in any of the six categories. Because of the non-descriptiveness of this category, it is impossible to clarify from the data just what would fall within this rubric. A conclusion one might draw from this observation is that graduates who participate in continuing education engage in a considerable amount of course work with topics that don't fall within the conventional course categories. Course taking in the categories of Biological-Physical Sciences and Social Sciences were the third most frequently taken. It is difficult to draw conclusions as to <u>why</u> courses in these two categories were taken. One can conjecture the graduates had professional advancement goals in mind, since courses

of these varieties are commonly included in the third and fourth years of the kinds of baccalaureate programs to which these graduates would aspire. Continuing Education courses in the Fine Arts and Humanities categories were not popular with this sample, regardless of graduation year or curriculum. The above conjecture that graduates use continuing education as a vehicle for furthering themselves in terms of additional occupational preparation and promotion agrees with this finding, since courses in Fine Arts and Humanities are least likely to fit into such a plan. From these conclusions the following suggestions appear to be in order:

Suggestion 1. Since continuing education is apparently utilized to a considerable extent by many of the Associate Degree graduates for reasons of professional growth and advancement, it is recommended that courses in the categories of Mathematics, Biological-Physical Sciences, and Social Sciences be made more readily available to them.

The findings herein report that most of the courses are taken during the individual's "away from work" time, although many of the continuing education courses are fully or partially reimbursed by employers. Therefore the time when the courses are made available appears to be a more important consideration than their cost. Which leads to a second suggestion:

Suggestion 2: Since continuing education is an "after work-hours" activity for most of those who take courses upon completion of their Associate Degree, it is recommended that they be made available during those times and in locations where the graduates do not have to travel long distances.

For graduates living in the Commonwealth, such courses could be made available in sufficient variety and level to permit easy enrollment. It seems this suggestion can be implemented through the vehicle of The Pennsylvania State University Continuing Education system throughout the state via the Commonwealth Campuses and other places. Some of these offerings, particularly Freshman-Sophomore level courses, can also be offered in the public community colleges and Area Vocational Technical Schools. The Pennsylvania State University Commonwealth Campuses, Area Vocational Technical Schools and public community colleges are distributed such that the majority of the graduates could easily commute to one of them. Since Mathematics is the leading continuing education course category for all graduates, it is of more or less similar importance to DDT, EET, and the other curriculum graduates. Therefore, it is safe to assume that there will likely be "takers" for such courses in the geographic areas where there is a reasonable concentration of graduates.

Suggestion 3: Since little or no demand has been indicated for continuing education courses in the categories of Fine Arts and Humanities, it is suggested that no serious effort be made to provide such offerings for the Associate Degree graduates.

Although this is a negative recommendation, it is useful to be aware of those course categories in which the Associate Degree graduates of these types of programs are likely not to want continuing education services. The older graduates, who were expected to take increased interest in Fine Arts and Humanities type courses after being away from their Associate Degree program for ten or more years, displayed the same absence of interest as the more recent graduates. Therefore, these graduates apparently did not seek "hobby-recreation-personal enrichment"

courses in the Fine Arts-Humanities categories. It would be interesting to investigate why this is so with graduates of these curriculums. As a part of this query, it would be interesting to learn whether the lack of availability of such continuing education courses is related to the situation as it presently exists.

Because of the relatively small number of graduates in the "other" curriculum category (which includes Business, Surveying Technology, Retailing, and Forestry Technology Programs), no suggestions for this specific group are made herein. Perhaps the major value of the continuing education data obtained from them is that it serves as a beginning of a longitudinal study of these graduates.

The continuing education profile for each class by curriculum is reported in parts V through VII, and for each graduation year for all graduates in Part VIII of the findings section. Five of the EET graduation group had their highest arithmetic means in the course category "Directly Related to Associate Degree Program." It should be cautioned, however, that a possible duplication exists in this response because the category "Mathematics" could be perceived in that light by many of them. Therefore, this finding does not provide a basis to alter the previous suggestions or to add a new one.

As indicated several times in this report, the "Other" course category was found to be popular and obviously is a catch-all for those continuing education courses not included in the other six categories. Therefore, the following suggestion is offered:

Suggestion 4: A comprehensive array of continuing education "for credit" courses in things not covered by the six other categories should be made available to the associate degree graduates.

The total number of Pennsylvania State University Associate Degree graduates in the groups studied (graduation years 1955 through 1971 inclusive) exceed 8,000. Since the sample examined is a randomized one on a stratified (by curriculum and graduation year) basis, it is reasonable to assume these findings are likely to be typical of most of the graduates. Furthermore, the characteristics of the associate degree graduates at The Pennsylvania State University are considered typical of their counterparts in other schools (such as public community colleges and technical institutes). Therefore, the suggestions made herein are likely to be appropriate for associate degree graduates of these kinds of programs throughout the region.

REFERENCES

Arnold, Walter M. Vocational Technical and Continuing Education in Pennsylvania. A report to the Department of Public Instruction and the Pennsylvania State Board of Education, Harrisburg, PA: Department of Public Instruction, 1969.

Burch, Glenn, Challenge to the University, Chicago: Center for the Study of Liberal Education for Adults, 1961, p. 63.

Gillie, Sr., Angelo C., Job Satisfaction Characteristics of Selected Associate Degree Graduates, University Park, PA: The Department of Vocational Education, Pennsylvania State University, 1973.

Grattan, C. Hartley, In Quest of Knowledge, New York: Association Press, 1955.

Honle, Cyril O. Major Trends in Higher Adult Education, No. 24, Chicago: Center for the Study of Liberal Education For Adults, 1959.

Hummel, Rodger G., Adult Continuing Education Activities in Institution of Higher Education in Pennsylvania, Vol. IX, Number 6, Harrisburg: Pennsylvania Department of Education, 1970-71.

Kleis, Russell J. and Butcher, Donald G., "Roles and Interrelationships of Continuing Education Institutions," in Nathan G. Shaw (Ed) Administration of Continuing Education, Washington: National Association for Public School Adult Education, 1969.

Knowles, Malcolm S. The Adult Educational Movement in the United States, New York: Holt, Rinehart and Winston, Inc. 1962, p. 249.

Murphy, James P. Alpha C.C.: A Model to Demonstrate the Organization and Operation of a Continuing Ed Program., Programs Division, Bureau of C.C.'s; Department of Education, Commonwealth of Pennsylvania, September, 1969, Department of HEW, U.S. Office of Education.

The Pennsylvania State University, Inventory of Continuing Education Activities in Pennsylvania Institutions of Higher Education, University Park, PA: The Phnnsylvania State University, 1969.

The Pennsylvania State University, Inventory of Continuing Education Activities in Pennsylvania Institutions of Higher Education, University Park, PA: The Pennsylvania State University, 1970.

Petersen, Renee and Petersen, William, University Adult Education. New York: Harper and Brothers, 1960, p. 10.

Social Research, Inc. Continuing Education for R & D Careers, National Science Foundation, June 1969.

Troutt, Roy, Special Degree Programs for Adults, Iowa City, Iowa: ACT Publishers, 1971.

Verner, Coolie and Alan Booth, Adult Education, Washington, D.C.: The Center for Applied Research in Education, Inc., 1964, p. 60.